The Common Forms of Contemporary Videogames: A Proposed Content Analysis Model

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A thesis submitted in partial fulfilment of the requirements of Teesside University for the degree of Doctor of Philosophy

Teesside University

School of Computing

April 2012

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Acknowledgements

I would like to begin by thanking my supervisory team; Dr. Clive Fencott, Dr. Paul Van Schaik (between 2005 and 2007) and my Director of Studies Dr. Charlie Mc Elhone. Over five years of research, I have enjoyed many stimulating meetings and all advice received has been of great value. I would also like to thank Teesside University, in particular, School Manager Mr. Gordon Smyrell and previous dean Dr. Derek Simpson for financial support and teaching provision allowing me to sustain myself over the course of the research.

I would also like to thank close friends Mr. Ian Simpson and Miss. Elizabeth Simpson for support and motivation over this time. Lastly, but by no means least, a special thanks to my mother, Mrs. Evelyn Allick, for great support and unwavering faith in my ability to achieve this qualification.

Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Teesside University. This work is original except where indicated by special reference in the text and no part of the dissertation has been submitted for any other degree. The thesis has not been presented to any other University for examination in the United Kingdom, Great Britain, Northern Ireland or overseas. Any views expressed in the thesis are those of the author, unless otherwise indicated.

This thesis provides a complete summary of the work undertaken between June 2006 and January 2011.

Please note that a short extract from the central common form study was published in the Autumn 2008 edition of Interfaces magazine. In line with doctoral regulations, this article is included as Appendix E of this thesis.

Steven Allick

Abstract

The aim of this thesis was to investigate trope usage in videogames, including the emergence of undiscovered ‘videogame’ tropes, and to create a new model for videogame categorisation using these tropes. This model serves to complement genre as a means of distilling videogame contents.

The investigative work formed two parts, initially considering how videogames use existing rhetorical tropes such as metaphor as expressive and communicative devices and secondly to analyse videogames as a source of shared literary tropes. Each shared literary trope was validated as a common form of expression (referred to simply as 'common form'), where its presence was proven in a substantial sample of videogames.

Common forms were gathered through a wide-ranging investigation of ten mainstream genres one at a time and in isolation to arrive at a pool of genre-specific common forms. The most closely related forms combined, with the help of relationship modelling techniques. A set of common forms capable of representing the contents of any videogame was reached. The result is a powerful hierarchical content model allowing a game to be described in terms of its common form usage profile. Common forms can effectively describe games which span several genres and differentiates between games which appear similar on the surface e.g. within the same genre hence aiding effective classification.

Common Forms were proven to exist on a number of different hierarchies ranging from those specific to a particular game, to a game type (genre) and even to those which are universal and hence can be observed within any modern videogame. Finally, it was possible to see the very core or 'heart' of the functioning videogame, the never-ending competition between player resources such as energy, ammunition or shields, the 'player status' and the threats, challenges or obstacles the game's systems throw at the player, the 'game status'.

The model does have considerable potential for application in educational settings such as college and university game development or appraisal classes and further development and testing would provide an effective tool for industry use.

1. Introduction

1.1. Background

Videogames are already over forty years old and fast becoming a mature medium. As a whole generation have lived with videogames, they have gained cultural acceptance as part of the furniture of our daily digital lives. Advancement of the medium and public acceptance has occurred considerably faster than for literature, or film. However, there remain factors which stymie further videogame growth (King, 2002, pg 7).

In the uncertain financial climate, a major issue is ensuring financial backing and solid sales for new game concepts. Indeed, "publishers continue to wrestle with rising costs, the increasing dominance of a handful of franchises and the shifting of occasional gamers towards social and mobile games" (Croal, pg 124, 2011). As a result sequels and franchised games dominate sales charts and release schedules alike.

As games are interaction-centric, storytelling, character emphasising and emotional display does not come as naturally to games as it does to passive mediums such as film or literature and as such games can appear somewhat crude in these areas by comparison. Indeed, Juul (2001) says that "the computer game is simply not a narrative medium".

Over the last ten years massive advances have occurred both in academia and industry. Sony, with the Playstation series of consoles, then Nintendo with DS and Wii by removing the barrier of the traditional 'complex' game controller, have progressively opened up the market in terms of age and demographics, providing games which can be immediately appealing to non-gamers. Indeed, "the Wii can be found in 59 percent of living rooms that have game consoles" making it more popular than PS3 or X Box 360 (Alexander, 2011).

In terms of academia, games were rarely considered in any serious academic works of the eighties and nineties. However, as the literature review (in chapter 2) attests, the twenty first century has seen a flood of new videogame research taking apart videogames to analyse their fundamental building blocks.

Change is already well underway, yet, there are still no established, accepted methods available for videogame development in the same way there is for scene furnishing, camera placement and lighting in film for example. Narrative remains a particularly active area of research with major works from Lindley (2002), Juul (2001) and McDevitt (2010). Work is not only academic, interactive environments, which function like a game demo, have been created to test out narrative concepts. Two well known examples of this were Facade (Automata, 2008), which describes itself as a "one act interactive drama" and Dinner Date (Stout Games, 2010).

Useable models for games development are now emerging, yet few developers are known to use these academic models for game development. Perhaps such methods are dismissed as being overly prescriptive, attempting to place rigid structure over skilled individuals who already have their own working practices and customs. Therefore whilst a need for new insights into videogames exists, consideration must also be given as to how information is to be utilised.

1.2. Motivation

Fowler (1989) observes genre is essential for communication. As a categorisation tool, genre informs the consumer what to expect in a specific media article. In terms of videogames, actions are categorised by genre. Games of a genre share fundamental aspects of control, game mechanics, screen layout and activity with other games of the same genre. Great reliance is placed upon genre; it is used for shelving of games at retail, for categorising games for review, for game recommendations (electronic or word of mouth) and by players and developers alike (Dinsdale, 2011).

However, recent developments in videogame content caused traditional generic categorisations to become diluted, to lose some meaning. Many games now span multiple genres and it is not always possible to define a dominant genre. Compared to ten years ago, relatively few games belong to one genre exclusively and hybrid or multi-genre games like Grand Theft Auto (DMA Design, 1998) and Shenmue (AM2, 2000) are now common place. The latter is a good example of how confused generic categorisation can become, Fencott et al [2] (2010) classifies Shenmue as an "action-adventure-beat-em-up-driver-RPG-movie".

Genre conjures specific expectations in the mind of the game player. They know exactly what should be in a First Person Shooter (FPS) game through FPS games played before and the conventions of genre and hence expect those elements associated with the genre to be present or will be disappointed, yet this stifles creativity as "designers must deviate from convention to innovate" (Dinsdale, 2011).

Furthermore, genres are rarely agreed upon, with the press using many and varied genres which can vary from one publication to another. Additionally, through its nature as a tool for categorisation, there is a limit to what genre can tell of the game content. The number of genres used in society continues to increase, thanks to new game platforms such as social networking sites, mobile and smart phones. The technical advance combines with the development of games in society i.e. a new wave of casual gamers and the next generation of gamers born into advanced computing technologies (Fencott et al [1], 2010).

Videogames remain a fruitful area for research and genre as a mode of categorisation appears more stretched than ever. The intention is to harness the analytical power of semiotics, specifically tropes, with the aim of creating a new means to categorise the contents of traditional and modern videogames.

This research continued in the steps of Fencott's (2003) fuzzy genres with an alternate approach where initially, videogames were used to test for the presence of existing rhetorical tropes while the main investigation treats videogames as a unique source in their own right, from which, new game-tropes may emerge.

The next section begins to introduce tropes and presents a broad definition of the rhetorical and literary tropes. These definitions are fundamental to the work completed and informed the entire body of research.

1.3. Understanding Tropes

There are two major definitions of the trope. A linguistic trope can be understood as: "a word or phrase that is used in a way that is different from its usual meaning in order to create a particular mental image or effect." (Oxford [1], 2010) or more specifically: "Rhetorical 'figures of speech' such as metaphor, metonymy, synecdoche and irony." (Chandler, 2006)

This is highly significant as the first study investigated videogames for the major linguistic tropes: metaphor, metonym, synecdoche and irony they use. Whilst this study could be extended over a wider body of tropes it was instead thought wise to consider the other way a trope is defined. The literary definition of a trope:

"A trope is a common pattern, theme or motif in literature. A well understood and well used idea or concept also known as cliché. The 'misunderstood monster' is a common trope; Frankenstein is the seminal story using this trope; which has formed the basis for numerous other literary and cinematic works. Literary tropes may refer to characters (e.g. the noble savage), plot (the clever prison break) or setting (the haunted castle)" (Webster [1], 2010)

The original premise of this study emerged from the literary definition of the trope. Therefore, throughout the main study the literary definition of a trope was used; that is a trope is considered to be a common form of expression. However, some justification should be presented as to why tropes were considered to be appropriate for this role and this comes from their established association with understanding and meaning making as Chandler attests: "tropes may be essential to understanding if we interpret this as a process of rendering the unfamiliar more familiar" (Chandler, 2002, pg 124).

Chandler (2002) explains how tropes (are commonly seen as) an essential method of improving understanding and are the very building blocks that enable meaning-making and allow meaning to be communicated. Chandler also explains how figurative language (including the trope) is a fundamental part of the current society or community. By their ability to aid, or possibly even enable the process of meaning making the trope is an extremely valuable semiotic code.

Clearly the use of tropes within the field of videogames, about which so much remains unknown, holds potential for substantial enlightenment through the discovery of a new set of tropes targeted specifically towards new media and videogames.

1.4. Thesis Statement

1.4.1. Aims

As the literature review in chapter 2 confirmed, semiotics and tropes, to date, had not been applied to videogames with the aim of creating a new method of categorising videogame contents. Academic research and personal experience as a game player indicated that genre is not always a clear or wholly accurate indicator of game content.

In response to this, a proposal was made to use the analytical power of semiotics to analyse videogame contents through two different studies. The first, a selective review of contemporary videogames for the presence of a pre-defined set of commonly used rhetorical tropes.

The second considered a grounded approach where videogames acted as a source in isolation and new literary tropes, titled "common forms" emerged from games which shared some common features between them and were compared to further games to reduce or improve their validity.

1.4.2. Thesis

The core of the thesis can be understood as:

Semiotic principles including use of rhetorical and literary tropes can be applied to contemporary videogames. Initially this allows embedded rhetorical tropes to emerge as descriptors of indicative content. This demonstrates the existence of tropes within videogames, which can then be analysed for insights into the nature of the game.

Next, shared aspects of videogames known as "common forms" can be selected to build a hierarchical content model of common forms that allows finer and more accurate categorisation of videogame contents than existing genre categorisation.

The key aims of this investigation were to:

1. Determine usage patterns of existing rhetorical tropes within a sample of contemporary videogames
2. Determine what common forms can be seen amongst games of the same genre
3. Determine what common forms can be generalised across all gaming genres
4. Use findings from 2 and 3 (above) to create a videogame content analysis model.
5. Test validity of model using videogames that fall outside of traditional genre classifications and from different time periods.

To elaborate, the purpose of the main study is to identify common forms of expression within videogames. A logical and ordered set of steps was followed:

1. Decide on a representative sample of videogame genres and games to adequately represent each genre.
2. Analyse the entire sample of games from each genre in turn whilst noting down potential common forms. Widespread occurrence identifies valid common forms.
3. Describe each common form giving criterion to detect its presence whilst reinforcing with examples of its appearance from the sample of games tested.
4. Determine how prevalent identified common forms are across the game sample and outside of the sample e.g. social network games, massively multiplayer etc.

As the literary definition of the trope was adopted for the main study, the discovery of each common form directly translates into discovery of a new trope, although only those common forms with application across all game genres were considered universal tropes.

1.5. Approach

This section details the approach taken to reach the goals highlighted and the work completed in achieving each of these goals (the indented lettered steps).

1. Determine usage patterns of existing rhetorical tropes within a sample of contemporary videogames.

   A. Used literature to determine commonly used rhetorical tropes.
   B. From descriptions selected most appropriate tropes for investigation
   C. Selected a representative sample of videogames for the study considering:
      - Whose definition of genre was used and what were the accepted genres?
      - Each genre was represented equally by example games.
      - Games were all of similar age.
      - Although use of games from different formats was allowed for a representative sample, the effect format and control system may have on the game experience was considered.
   D. Investigated each game thoroughly using a number of methods for consistency:
      - Personal gameplay experience.
      - Viewed others playing directly or videos of others playing, important as mind is less concerned with gameplay, new insights can emerge.
      - Considered the views of other experts such as research papers and reviews in the media.
   E. Recorded qualitative (descriptive) and quantitative (numerical) data and analysed it.

2. Determined what common forms were seen amongst games of the same genre.
   A. Using research from literature search, reached a definition of common forms.
   B. Decided on qualifying criterion for a common form to be considered to exist.
   C. Selected a gaming genre to investigate.

D. Upon investigating a specific videogame noted down important features of gameplay, environment, interface etc. How they occurred, identifying features etc.
E. Compared observed features with other games of the genre noting:
    - Games which shared the feature; consider differences in implementation.
    - Games which do not share the feature; if the feature was not present then how did the games represent this concept?
F. Features present in all games of that genre became important candidates for further investigation.

3. Determined what common forms can be generalised across all gaming genres.

A. Features were taken from their origin genre and tested across all genres.
B. Features present within all gaming genres were noted as universal common forms; fundamental building blocks of game content.
C. Details of the common forms finding were reported with a full description of how the form emerged in genre of origin and how its presence could be charted across genres.

4. Used findings from 2 and 3 (above) to create a videogame content analysis model.

A. Used the results to determine how common forms related to each other.
B. Used relationship modelling to determine dependencies and which forms can be linked.
C. Determined the hierarchy of common forms and their relationship to game contents and genre.

5. Tested range of applicability of the model using videogames that fall outside of traditional genre classifications and from different time periods.
    A. Selected the test candidate games based on the following criterion:
        a. Games which did not belong to traditional genre classifications e.g.
            i. Massively Multiplayer Online
            ii. Music and Rhythm

iii. Survival Horror

b. Games from different time periods e.g.

i. Early arcade titles of 1970s and 1980s

ii. 16-bit console and computer games from early nineties

iii. Early home 3D games from mid-nineties onwards

B. Tested candidate games for the existing common forms and reported on results.

1.6. Methods and Protocol

1.6.1 Analysis and Data Gathering

During the data gathering process, a complementary blend of quantitative and qualitative analysis techniques was used. As sample games were investigated detailed notes were made and later written into complete reports. These described the context of the trope and common form occurrences, giving vital context and background observations which would be lost in a wholly quantitative investigation.

Quantitative analysis was varied and effective with adaptations made to match the individual needs of the experiment. This could be maintaining a count of trope occurrence or might involve determining the average occurrence of metaphors in a racing game, for example. By noting the location and circumstances of each trope occurrence, some more advanced forms of statistical analysis were possible such as plotting the number of metaphor occurrences in game interface versus game environment.

For the main investigation qualitative analysis dominated (though quantitative techniques were still used when appropriate) and was used in a similar manner to how Fabricatore (2002) did, with a grounded approach taken. Therefore, each game was treated as a unique source in its own right and common forms were allowed to emerge.

Although elements of grounded theory were used in the main common form experiment, it was not possible to follow classic Glaserian Grounded Theory (GT) principles as they conflict with the rigour and careful organisation that PhD level academic research demands i.e. the first GT principle states that a literature search should not be done nor a research problem defined (Rhine, 2009).

Nevertheless, aspects of grounded theory have informed the research in the main investigation, most notably the concept of research data directly informing the direction the experiment took "Analysis and data collection continually inform one another." Furthermore, the initial mode of qualitative data (as described above) sampling resembled GT point four, memoing, in that information was recorded as a continuous flow as it emerged with structure and format added later (Rhine, 2009).

Furthermore, Chapters 8 (Genre Specific Common Forms) and 9 (Common Form Relationship Modelling) employed relationship modelling techniques, where, simple block diagrams demonstrate relationships between different common forms and lines were drawn to show these connections visually. The notation used is based on data modelling diagram notation, commonly used to show related data tables in a database package, for example.

Lines show the type of relationship, black demonstrates a mandatory relationship, typically with inheritance, whilst blue presents an optional one with no inheritance.

1.6.2 Sampling Criterion

In a similar manner to Fabricatore (2002) the focus was directed towards single player game content, the way an individual player, as opposed to a group or party, would experience the game. Multiplayer only games such as Massively Multiplayer Online Role Playing Games (MMORPGs) were not considered as part of the main study. The set of gaming genres used is based on works of major academics in this field and includes:

- First Person Shooter (abbreviated to FPS)
- Driving
- Adventure
- Platform
- Real Time Strategy (abbreviated to RTS)
- Simulation
- Role Playing Game (abbreviated to RPG)
- Puzzle
- Sports
- Fighting

Nine of the ten genres were taken from Steven Poole's Trigger Happy book (Poole, 2000) with the adventure genre added. Poole is highly respected in the field with over twenty years of videogame experience, and still writes regular videogame articles for Edge Magazine (Poole, 2010). Other academic sources were also considered too, of course, such as Earnest Adams and Andrew Rollings (2003) classification taken from their book on games design. Their listing is presented below.

- Action
- Strategy
- Role-playing
- Sports
- Vehicle Simulations
- Construction and management games
- Adventure games
- Artificial life, puzzle games and other genres
- Online games

As with Poole's (2000) listing, the number of genres has been minimised in the interests of clarity. Furthermore, both listings share a number of genres including strategy, role playing, sports and puzzle. Poole's listing was considered more appropriate overall, since the terms of the investigation would exclude some of Rollings and Adams (2003) genres (e.g. online games would not be considered). Nevertheless, the absence of the adventure genre in Pooles categorisation was considered a serious limitation and hence this has been borrowed from Rollings and Adams (2003) genre listing to arrive at the ten genres listed at the start of this section.

Whilst, there were many potential sources of videogame genres, such as those used to shelve games in retail (high street and online) space, those used by journalists etc, Poole's classification was favoured for the interests of simplicity and manageability. Professional videogame review websites such as IGN or Gamespot use a total of almost four hundred genres to describe videogames (Fencott et al, 2010).

Using such an extensive listing would have made the study extremely complex and hampered genre comparisons as the number of genres would have been unmanageable.

The simulation genre refers to games which give the player complete overseer control of a particular zone or area. These are commonly also known as God games, referring to the level of control a player has. Sim City 2000 (Maxis, 1993) and Populous (Bullfrog, 1989) were two classic examples. The specialisation 'vehicle simulation' was used when referring to games which attempted to simulate the piloting or driving of a specific vehicle i.e. flight simulators. Vehicle simulations (other than driving games) were not considered in the study hence they were not featured in the genre list. When selecting common forms in the second study, audio (and related aspects of vocals, sound effects and music) was not considered as this is a separate field of sound engineering and as such is deserving of specific investigation.

In terms of format, games tested were mainly on traditional home gaming platforms of the current generation (as of January 2011) i.e. PC, Microsoft X Box 360, Sony Playstation 3, Playstation Portable, Nintendo Wii and DS. Nevertheless, if appropriate to the study, games from earlier systems were also considered. Emergent multipurpose gaming platforms such as mobile and smart phones, set-top boxes, MP3 players etc were considered outside the scope of this study. As there are currently very few games tailored towards the motion tracking capabilities of the Sony Playstation Move and Microsoft X Box 360 Kinect, these were also considered outside the remit of this study. Although some Nintendo Wii games with motion control features were considered.

Finally, although actual sampling of the gameplay directly, that is as a player, was important, and the primary source of data, this was, as deemed necessary, complemented by viewing of others playing both directly (where possible) and indirectly i.e. from reviews, screenshots and video. The disconnection this mode of experience brings is important as it allows one to be removed from the game mechanics and hence focus more clearly on visual elements such as the interface and Heads up Display (HUD). Of course, reading reviews and appraisals of games also allows one to appreciate other critics points of views and hence enjoy a more balanced view of the field overall.

1.6.3 Scales and Measures

In the main common form study, the presence of each common form was rated according to genre. Initially a three level scale was considered where the common form could be present, have limited presence or be undetectable. However in use, this scale proved too basic and failed to offer any real insight or meaningful way to compare results from one common form to another.

Therefore, a scale of one to ten was ultimately chosen, with higher numbers representing increasingly strong common form presence. This allowed a finer granularity of data to be collected and the collection of numerical data facilitated meaningful comparison between each of the common forms identified, for example to find out which common form has strongest presence in the FPS genre.

A scale of one hundred could have been used but justifying small differences in recorded numbers would have been difficult in the space confines of the data tables and maintaining a large number of scores could have increased potential for error. A scale of one to five was considered too, but still only offers a fairly crude granularity of data and did not seem a significant improvement over the original, inadequate, three-point scale.

1.7. Thesis Organisation

Chapter 2: Literature Review

This chapter reviews recent works, relating to the three strands of investigation. These were; semiotics and the related fields of tropes and videogames. The chapter begins with a summary of semiotics, briefly describing core components such as the signifier, signified and sign vehicle. It moves on to look at the use of semiotics in media. Secondly tropes were considered. Examples of rhetorical and literary trope use were given with explanations and examples of the most commonly used tropes.

Finally, videogames were considered. Initially, how games are sectioned into genre and then considering an array of models for classifying videogame content based on qualitative appraisal, narrative, immersion and emotions of play.

Chapter 3: Rhetorical Tropes in Videogames

This chapter discusses the initial investigation where videogames were investigated for the presence of the rhetorical tropes; metaphor, metonym, synecdoche and irony. The reader is taken through the process of trope identification with illustrated examples.

Major components of the sample games are investigated such as the composition of the on-screen interface, game environment and character interaction. Results are compared with other games investigated to establish major differences and similarities of trope distribution and usage.

Results from this study were analysed in some detail. The chapter summary discusses findings with some observations on what this revealed about trope usage in videogames.

Chapter 4: Widening the Definition of the Trope

This is a short linking chapter which begins with a critical appraisal of the tropes from games experiment discussed in chapter three, explaining what was achieved and what work remained to be done e.g. for future research. The chapter continued to detail how the common form experiment successfully accomplished the remaining goals of the research. This chapter also positions this work as part of the overall research and links it back to the foundation of this research, the rhetorical and literary definitions of the trope. The distribution of content throughout the remainder of the thesis is explained and how it fits in with the two experiments this research features.

Chapter 5: Player Status Common Forms

This chapter discusses four major common forms related to player status, that is, resources the player is provided with in a videogame. Each common form is introduced within the genre it is first identified in, where the clearest examples of the common form exist and explained with its identifying features and how further instances of it were verified. The functioning of the common form and its role as an important part of the overall game mechanics was explained across each of the ten major gaming genres, with illustrated examples from real videogames used where available.

The four player status common forms this chapter investigated are:

- Status / Energy Depiction
- Non Player Characters
- Items
- Level Selection

Each of these common forms (above) is a section within the chapter and each section is concluded with a summary of findings and a summary chart, in which, scores were given to denote strength of presence within each of the ten gaming genres.

Chapter 6: Game Status Common Forms

This chapter discusses the four major common forms related to game status; the problems, hazards and obstacles a game presents to challenge a player and slow progress. These common forms include:

- Career or Story Mode
- Difficulty
- Speed
- Colour

The same format as chapter five is adopted to ensure consistency and traceability of results. Each common form is introduced in the genre of origin to provide context and discussed in the differing forms they take across genres and summarised after each section with illustrated examples of real videogames used throughout.

Chapter 7: Complete Common Form Listing

This chapter begins with a simple listing of all common forms identified and verified to have presence across multiple genres. Please note, the common forms discussed in chapters five and six are merely a sample from the complete investigation, hence the reason far more common forms can be seen in this listing. This chapter divides the body of common forms into universal and non-universal categories. Such divisions are fully explained and justified; Universal common forms are fundamental building blocks of games with applicability across all gaming genres. Non Universal common forms have cross genre impact but are not seen in games of all genres.

Chapter 8: Genre Specific Common Forms

This chapter introduces the first branch of the main study, where videogames were investigated for examples of literary tropes, titled 'common forms'. Within each genre, the common forms are listed, described and justified, while relationship modelling is used to plot connections and generalise the common forms to the smallest body possible to best describe the contents of the genre. Results of each section are summarised building towards a complete cataloguing of common forms by genre. For more information on the common forms identified in this chapter, please see the accompanying CD-ROM for the complete unabridged discussion of all 120 genre-specific common forms identified.

Chapter 9: Common Form Relationship Modelling

This chapter uses relationship modelling techniques to generalise the large body of common forms identified in the preceding chapters into a core set of common forms fundamental to all videogames. A process of abstraction facilitates progression towards a complete model of videogame contents.

A total of three relationship models were presented and described, each one demonstrated further abstraction. Finally, an attempt was made to use the models to generalise videogames down to two defining components of videogames; player and game status. Throughout the chapter new relationships between common forms were identified and described with a discussion of how this impacted design of the overall content model.

Chapter 10: Pyramid Model Testing

This chapter discussed how the pyramid content model was tested. A sample of games to test were chosen from new and emergent genres such as rhythm, social, casual and online, intentionally outside of the ten (mainstream genres) used in the development of the model. This chapter presented the raw test data and explained how the test sample of games used common forms and what trends emerged from this data.

The chapter continued to discuss what the model revealed about casual and classic games investigated and ultimately which games could not be expressed adequately using the current model, thus defining the descriptive boundaries of the model and potential areas for improvement.

Chapter 11: Conclusions, Evaluation and Future Work

This chapter summarised the work completed, bringing together the varied threads of investigation and considered what new knowledge had been delivered and possible impacts this had within the research field. In particular, the relationship between common forms and tropes was considered and the insights common forms gave into the nature of videogames and their evolution over the years. This chapter also dealt with possible future contributions to related areas of theory, namely those of semiotics, specifically tropes. The possible application of game-tropes in future research studies is considered.

With a view towards a possible hybrid model in the future, the current model was compared with a number of the models evaluated in the literature review (chapter 2), with an appraisal of what the two models could contribute to each other.

2. Literature Review

The literature review presented covers four major subjects of semiotics, tropes, genre and videogames. Initially, semiotics were investigated with early parts summarising the fundamentals of semiotics such as how the sign is formed, later providing discussion of the use of semiotics within computing and videogames. Similarly, principles of tropes were considered, moving on to discuss major rhetorical tropes in greater depth with examples of use in recent research.

Next genre was considered with an overview of the origins of genre and its place within society, moving on to discuss application of genre to videogames and how game genres are unique. Genre is the most established, widely accepted mode of categorisation and therefore proper understanding of genre is essential (Chandler, 2000).

The final sections considered videogames, beginning by examining existing videogame development models; initially focusing on technical models arising from game contents, widening to consider models based on player emotions, immersion, frustration and even the passage of time. This allows one to attain an appreciation for the breadth and diversity of existing research, an understanding of the models already available and demonstrates the place proposed work has i.e. the niche the work fills.

2.1 Semiotics Literature

2.1.1 Semiotic Principles

Major philosophers Plato and Aristotle are precursors to semiotics. Semiotics originates from Greek word “semeiotikos” and is the study and analysis of individual signs in a system (Cobley, 1999, pg 4). Umberto Eco (1976) provides a broad definition of semiotics “semiotics is concerned with everything that can be taken as a sign” Eco, considers anything standing for something else a sign in this context (Eco, 1976, pg 7).

To elaborate "Semiotics - is anything that conveys a sense: words, pictures, sounds, gestures, clothes etc" It is social conventions, known as codes which give signs their particular meanings. (Caliani et al, pg 2, 2002). However, Eco (1986) argues that semiotics "cannot be a science in the sense of physics or electronics" (Eco, pg 7, 1986).

Saussure defines the sign using a two-part model where the sign consists of signifier and related signified "correlation between a signifier and a signified (or between expression and content)" (Eco, pg 1, 1986).

Saussure considered both signifier and signified to exist only in the mind. Yet, modern theorists consider signifier, the physical form a sign takes via vision, audio, touch, taste or smell. Signified is concept triggered in the mind from signifier. The relationship between signifier and signified is signification. Signifier can relate to numerous concepts (signifieds) each a new sign and the reverse is true (Cobley, 1999, pg 12).

To Mitchell et al (2003) signs are “products of society” influenced by the “environments in which the sign systems operate”.

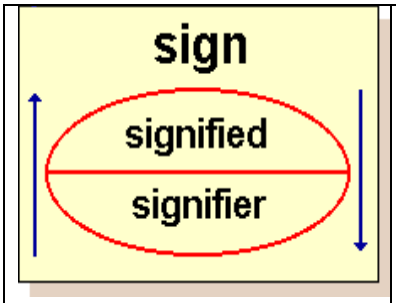
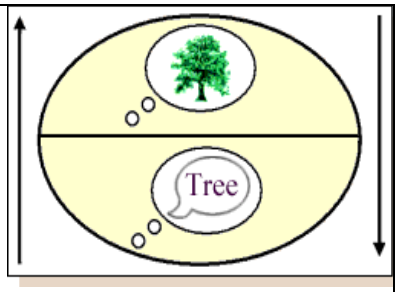


Fig1 (left) and fig 2 (right). There is a tight, systematic connection between Saussure’s signifier and signified (Kerne, 2004).



Peirce considered the sign a "concrete, token element (the utterance)" and presents a three-part model of the sign featuring representamen, "the type to which a coding convention assigns a certain content by means of certain interpretants" (Eco, pg 180, 1984). This is a signs form; this may or may not be physical (material), the interpretant is sense or meaning inferred from the sign and finally object which is what the sign refers to (Chandler, 2002, pg32).

Pierce's model possesses extra levels of complexity by virtue of different types of object; immediate and dynamic and the three possible types of interpretant; immediate, dynamic and final (Cobley, 1999, pg 22).

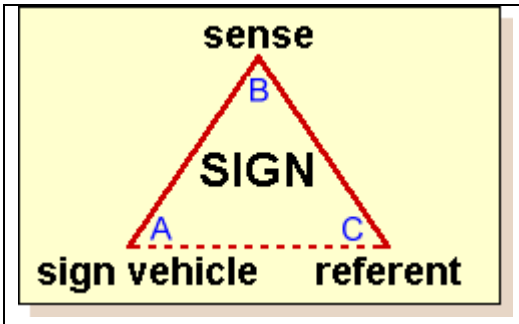


Fig 3 (left) shows an example of a semiotic triangle. Though based on Peirce's theory, words used to label the three sides are not always consistent with names Pierce originally proposed for them. Here sign vehicle, sense and referent are used.

Use of semiotics is spread across many major academic disciplines including language study, philosophy, sociology, psychology, media study and education (Chandler, 2002, pg 2).

When used as a means of textual analysis semiotics relates most strongly to the structuring of the text. This can be broken down to two types. Firstly, syntagmatic is concerned with the structuring of the sentence i.e. the position and ordering of the words that make up a sentence. Paradigmatic is concerned with the choice of words e.g. why one word was used in place of (potentially) several others (Cobley, 1999, pg 17).

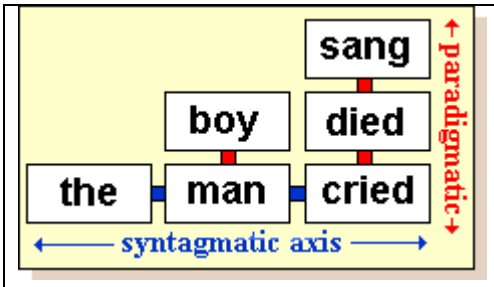


Fig 4 (left) Syntagmatic analysis is the X-axis; ordering of words and paradigmatic analysis is Y-axis (substitution of words) (Cobley, 1999, pg 17).

Chandler (2002, pg 3) observes each medium has unique capabilities and limitations "we have no way at all of representing smell or touch with conventional media" hence medium promotes some forms of communication but limits others. Limitations inherent can be forgotten, media and mediation becomes invisible "In using any medium, to some extent we serve its 'purposes' as well as it serving ours" (Chandler, 2002, pg 4).

Semiotics empowers its users to see that supposedly truthful accounts of reality are heavily mediated despite use of highly realistic (iconic) imagery. TV and film rely upon codes based on widely understood conventions inherent within the society of the time. Chandler says "codification is a process whereby conventions are established" where codes change over time and overused codes may be abandoned (Chandler, 2002, pg 172).

2.1.2 Computing Semiotics

Scalisi (2001) writes on computer-based codes; the interface appears as “a world of signs which we operate and manipulate, but sometimes the computer also “speaks” to us”. Humans often think of the computer as another conscious entity, as Walz, Poultney and Wörner (2002) agree and, on human learning process, observe humans are not born with knowledge of codes necessary for communication, these are learned. HCI negates the need for this learning process, but why should we not make use of the human ability to learn? Use of familiar concepts can speed the learning process. Such practice is use of code conventions, a growing theme on the web i.e. lens for search. Context, situation or location of a message plays a major role in terms of meaning derived from it.

Scalisi (2001) continues to propose a semiotic communication model for interface design. Indeed, semiotics encompasses all forms of communication. Within semiosis; how signs form meaning, there is no clear notion of sender, yet communication necessitates a well defined sender i.e. the act of human to human communication. However, human to computer communication does not clearly fit a semiotic or communication model, indeed, one may consider semiotics unsuitable for application to the neutral world of computing.

Yet Mitchell et al (2003) argue, “any sign system has to operate within a given social environment”. Therefore, there exists a vital social dimension of communication. This opens up the huge field of computational communication for semiotic analysis.

Ronald Jacobson’s (1966) six factor model is applied, which consists of a sender, receiver and message as one set and context, medium and code in another. A receiver is just as vital to communication as sender and the interpretation formed by receiver is ultimately the final meaning the message holds.

Mateas (2003) presents a structuralist semiotic investigation of Artificial Intelligence (AI) relating concepts of artistry with AI, via use of interpretive and authorial affordances. Interpretive refers to meaning whilst structure refers to authorial content. Expressive AI combines AI research with principles of art and artistry “the negotiation of meaning mediated by an art object and internal structure of AI systems.” The unification of two viewpoints is achieved through machine affordances. This can be depicted in semiotic terms as relation between “sign system of the code (code machine) and the sign system used to talk about the code (rhetorical machine)".

Work by Petric, Tomic-Koludrovic and Mitrovic (2001) demonstrates a connection between semiotics and AI research. Within AI, researchers consider micro sociological theories that hinge upon concepts of interaction and communication. Semiotics provides tools, which may further understanding. Semiotic theories investigated include Greimas and Courtés (1982) distinctions between actor and actant. Actants accomplish pre-determined acts independently of other ongoing activity with narrative trajectory playing a vital role in this. Actor incorporates features of actant but adds interaction.

Laeo (2002) presents a semiotic analysis of hypermedia where a user’s traversal of hyperlinks across the Internet is likened to traversal of a labyrinth. Two different perspectives are employed, a traditional development perspective and an overview of all possible paths, the labyrinth a reader constructs when operating choices between hypermedia chains. Ultimately, hypertext shares aspects with all labyrinth types but is far more complex than traditional labyrinths, a Rhizone “can be connected in different directions and from each of its points”. There are multiple central points.

Kerne (2004) presents semiotic analysis of the hyperlink, where anchor functions as signifier and destination as signified. The concept of the semiotic operand, hypersign emerges as a hypermedia surrogate. Individuals form personal collections of hypersigns during research, writing, shopping and even in recreation and entertainment. A need to “discover how to enable users to re-present these collections of syntagmatic and systematic hypersign forms” was identified.

Laeo (2002) and Kerne's (2004) studies demonstrate an interesting application of semiotics to the computing field but their focus being restricted to the Internet domain means it is unlikely to significantly inform the planned research.

2.1.3 Artistic and Media Semiotics

Torop (1999) discusses Lotman's concept of semiosphere "world as defined by the semiotic competence of living organisms". Semiosphere is essential to generation of signs and, by extension, meaning making. It is perforated by boundaries enabling translation of messages. Distinctions are drawn between vertical and horizontal semiotic systems where vertical represents genetic communication passed down over hundreds of years. Horizontal represents communication over ecological space, enabling the semiosphere, a pre-requisite to advanced social complexity and learning processes.

Alberti, Maggiorini and Trapani (2002, pg 8) present a semiotic tool to aid creation and manipulation of narrative in a film context. Greimas (1970) provides a structural semiotic interpretation of narrative through six types of actant "the subject, the object, the helper, the opponent, the destinateur and the receiver". The subject of the story is hero in search of object or artefact of value and throughout the quest there are allies and opponents to be avoided or defeated. A narrative can be broken down into four units of contract, competence, performance and sanction.

2.1.4 General Semiotic Research Critique

This section provided merely a glimpse of the diversity and variety of on-going research regarding semiotics in both traditional and, the researches focus, in new media forms. Works by Walz, Poultney, Wörner (2002) and Kerne (2004), serve as stark reminders of how prevalent digital media is in all aspects of life and how semiotics enables naturalised realisations that otherwise go ignored to emerge.

The work of other researchers serves as an excellent demonstration of how flexible semiotics is, able to adapt seamlessly across fields and media. Semiotic sub-fields, such as semiotics of computing, audio, communication and urban living demonstrate richness and diversity of research in this field. However, despite considerable activity in the field reinforcing the value of semiotics, and strengthening the argument for semiotic analysis, direct application of semiotic principles specifically to videogames remains quite rare, and argues the need for this research.

The research examples discussed here were cited to demonstrate the rich and diverse nature of semiotics research and its effective and practical application across many fields, yet further investigation into this area falls outside the remit of the proposed research.

2.2. Rhetoric and Tropes Literature

2.2.1 Principles of Tropes

Tropes allow representation of one concept in terms of another, aiding understanding and learning. The use of tropes is widespread, indeed, it is unavoidable, the basis of understanding. Tropes are unnoticed and pass invisibly (Chandler, 2002, pg 125).

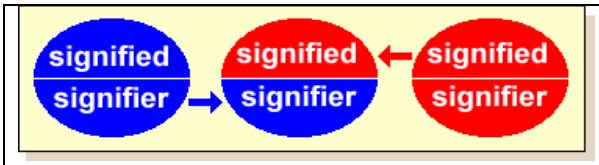


Fig 5 (left) How tropes affect signification. The resultant sign (centre) features signified and signifier from different sources.

Chandler (2002, pg 140) describes denotation as literal, obvious or commonsensical meaning, a universally understood meaning and connotation as individual's personal interpretation of the sign, coloured by many aspects including age, gender, race etc.

Bignell (2002, pg16) likens denotation to superficial assigning of label to object e.g. Buckingham Palace as a building in London and describes connotations as hidden, deeper meanings e.g. describing a Rolls Royce denotatively labels it a car but it has multiple connotations including prestige, wealth and luxury.

However, as Cobley (1999, pg 48) notes; denotation and connotation are not exclusive, indeed each item has both denotative and connotative meanings associated with it. However, one can separate connotation in the extra investment needed by the individual in the forming of a meaning.

2.2.2 Metaphor and Myth

Bignell (2002, pg17) observes Metaphor enables representation of one concept in terms of another (well-understood) concept “making one signified appear similar to another different signified”. Highlighting presence of metaphors can enable new insights on the purpose the metaphor serves, letting the observer see “whose realities such metaphors privilege” (Chandler, 2002, pg 125). Some common examples of the Metaphor include; "the neck of the bottle" or "the leg of the table" (Eco, pg 79, 1984).

Rachovides, Swiderski and Parkes (2001) examine metaphors in multimodal input systems involving use of complementary input techniques beyond traditional keyboard, mouse and gamepad to consider use of speech, gaze, gesture etc in combination with traditional technologies. Two major metaphor based prototypes were developed including multimodal story creation with story conductor and using metaphors visually to represent available media types for use in story formulation.

The overall contextual setting of the system is based on metaphors of an orchestral conductor and instruments on the theatrical stage “a set of media objects” manipulated by the story’s conductor (user) featuring sound, video, animation and still imagery (photographs). The volume control uses metaphor of a volume slider as seen on the Windows desktop to control detail of textual, diagrammatic, audio and video representations. A higher level provides longer document, greater quantity of matching search results etc.

Reducing the level has the opposite effect providing just an overview or summary of a subject e.g. for a newspaper reducing the setting would allow one to see just the headlines (Rachovides, Swiderski, Parkes, 2001).

McPhees (2004) artistic installation uses live video and audio data recorded on site with tropes “The two tropes or modes of data, are, one, a kind of ‘accumulation and assignation’ and two, a kind of ‘illumination and acoustic exploration’. These couple or slipstream past and into each other.” These, rather abstract, tropes aid the process of data visualisation, bringing the sublime into the physical world.

Myths improve people's understanding of the world. To Lévi-Strauss (1972, pg 211), myth is “a message from our ancestors about humankind and our relationship to nature, in particular how we became separated from other animals”. Meanwhile Bignell (2002, pg 23) observes myths serve the interests of a group through ideology. Groups in power reinforce their ways of thinking ensuring myths they purport are dominant and naturalise them to seem normal, necessary and commonsensical.

As the most well known facilitator to understanding, metaphors hold great potential for offering interesting revelations about videogames and also serve as good candidates for informing their development, as they did for graphical user interface design. Indeed, as past research (see chapter 3 and CD-ROM) demonstrates, knowingly or not, developers do make considerable use of metaphor and other tropes (Marcus, pg 44, 1998).

2.2.3 Metonym, Synecdoche and Irony

A metonym involves “the act of referring to something by the name of something else that is closely connected with it, for example using the White House for the US president” (Oxford [2], 2010). Bignell (2002, pg 17) summarises this to “replacing one signified with another related signified” similar to a paradigmatic shift (see section 2.1.1).

As Reddy (1979, pg 309) notes, metonymies can occur in chains, where several layers of metonymic relationships are followed to reach the meaning, e.g. “You’ll find better ideas than that in the library” (Reddy, 1979 pg 309). A chain of interconnected part for whole metonymies, which are followed to reach the original meaning e.g. ideas are expressed with words, words are printed on pages, pages are found in books and books are found in a library (Chandler, 2002).

The synecdoche, sometimes considered part of metonymy is a figure of speech in which a part is made to represent the whole or vice versa e.g. "'Australia lost by two goals', Australia is used to represent the Australian team." Other common examples include a head or portrait shot representing the entire person or a piece of cake to represent the whole cake (Oxford [3], 2010).

The Merriam-Webster dictionary (2004) defines irony as words expressing something other than or especially opposite to the literal meaning, manifest as "a humorous or sardonic literary style or form" or "an ironic expression or utterance". Chandler (2002) agrees and adds; exaggeration, understatement and overstatement can be regarded as ironic. Irony uses binary opposition and is often marked with a sarcastic tone, a knowing smile or the word "not" following the utterance.

Irony and humour are considered by some to be inseparable "irony is a universally important ingredient of humour" (Fox, pg 65, 2005). English humour, particularly, is rich in irony. Indeed, the English take "patriotic pride in our sense of humour, particularly our expert use of irony" (Fox, pg 64, 2005).

2.2.4 Aporia and Epiphany

The next two tropes hold particular application to videogames as they describe the process of gameplay in progress, the encountering of problems or obstacles (aporia) and the solving, resolution or overcoming of these problems (epiphany). Jørgensen (2003), in the investigation of Baldur's Gate II (Bioware, 2001) and Heroes of Might and Magic IV (New World Computing, 2002), notes aporia and epiphany emerge in pairs; the player is given an initial problem to solve but then to get information needed to progress, must solve another different problem and so on. This problem and solution sequence can, and often does, dominate a whole game.

Crogan (2003) and Jørgensen (2003) observe a whole game can be considered chains of aporia-epiphany sets the player works through whilst at play, similar to the chained set of metonymies described in section 2.2.3. Aporia also refers to "simulated or real doubt, as about where to begin or what to do or say." or "a difficulty encountered in establishing the theoretical truth of a proposition" (Dictionary.com, 2008).

One could consider epiphany “a sudden, intuitive perception of or insight into the reality or essential meaning of something.” or “a literary work presenting a moment of revelation and insight” (Dictionary.com, 2008). Epiphany is a moment of sudden, euphoric inspiration, the classic ‘eureka’ moment. Through epiphany, there is acquisition of new knowledge about the subject in question as Crogan (2003) observes. However, Tigges (1999) argues one should not confuse genuine epiphany with normal thought and reasoning; it is important to note epiphany should emerge through ordinary, common everyday experience; there is no set pattern or set of steps towards epiphany.

2.2.5 Tropical Research Critique

Scalisi (2001) makes the vital point that metaphor is just one of a range of available tropes and rhetorical devices, the fields of science, rhetoric and literature developed a variety of methods of guiding the reader’s interpretation. Indeed, during the eighties and nineties metaphor was used to integrate familiar, real-life desktop icons like folders, files and waste bins into computer applications, which served to inform user interface design. Yet, by contrast, computer software development (including videogames) has largely ignored the use of other rhetorical tropes like metonym or synecdoche that might hold potential for improving human and computer interaction.

However, there are signs of improvement with a number of authors including Jørgensen (2003), Crogan (2003) and Aarseth (1997) beginning to consider the importance of tropes in videogames. Such works demonstrate the potential for fruitful research in this field and may provide a context against which current research can be evaluated, providing inspiration for investigation of rhetorical tropes.

Initially, Jorgensen's (2003) work seems to hold particular relevance above the other works considered in this section, with the continuous interplay of aporia and epiphany a simple, elegant, yet also revealing way to consider the core gameplay of almost any videogame. In addition, the similar way chained metonymies are followed to reach their original meaning, suggests other tropes can be successfully applied to videogames too.

These works all lend strength to the argument for a trope-based investigation of videogames. Rhetorical tropes form a vital part of the proposed research which features a trope-based appraisal of videogames and the development of a model with the master tropes aporia and epiphany at its core.

2.3 Genre Theory Literature

2.3.1 Background and Origin

Merrian-Webster (2004) define genre as a method for classification of artistic works "artistic, musical, or literary composition characterized by a particular style, form, or content". Chandler (2000) states "Genre comes from the French (and originally Latin) word for 'kind' or 'class'". Genre allows differentiation between different kinds of texts "the division of the world of literature into types and the naming of these types". Fencott et al [1] (2010) adds that genres provide abstraction, a theory employed in everyday life on a constantly recurring basis; hence, genres became a natural part of life.

Fencott et al [1] (2010) observes the classification of genres is done unconsciously, one cannot clearly explain how people assign genres or what process lies behind this. Despite huge penetration of genre across mass media, there are still believed to be "many genres (and sub-genres) for which we have no names". Miller (1984) suggests "the number of genres in any society… depends on the complexity and diversity of society"
Theorists such as Tudor (1974) and Neale (1980) agree, genres change based on the society of the time and is representative of it "a genre… defines a moral and social world". Chandler (2000) notes a genre embodies certain values and ideological assumptions and Hayward (1996) adds "genre conventions change according to the ideological climate of the time".

Neale (1980) observes that genre, rather than simply representing values of a specific time, instead, shapes these values, hence having lasting impact upon society. Thaites (1994) reinforces this view and identifies a reciprocal relationship between genre and social conventions. As Feuer (1992, pg 145) notes Marxist theory states "the genre 'positions' the audience in order to naturalise the ideologies which are embedded in the text". Kress (1988, pg 107) adds, "each written text provides a 'reading position' for readers, a position constructed by the writer for the 'ideal reader of the text'".

Within videogames, this ‘reading position’ becomes the games genre. Using semiotic theory, it is possible to observe, “a genre is a shared code between producers and interpreters of texts included within it.” Fowler (1989) adds, “communication is impossible without the agreed codes of genre”

2.3.2 Videogame Genres

Games are categorised by genre. Gamers often stick to a select number of genres they know well. Unlike films where genres are "defined based on content (such as subjects or themes) and/or form (presentation and style)" (Ye, pg 773, 2004), specific skills are needed to play games in an unfamiliar genre and, as Fencott et al [1] (2010) notes; gamers are rarely adept at all genres, as they often require contrasting skill sets. By playing games from the same genre, players can re-use many of the skills they already learned meaning they can learn the games rule set quickly as they already have acquired the majority of the knowledge they need from past games (Casual Game Design, 2006).

Games in the same genre can vary significantly e.g. a mission based driving game such as Driver (Reflections, 1999) compared to a ‘pure’ racing game such as Colin Mc Rae Rally: Dirt (Codemasters, 2007). Games press generally recognise many genres according to how games are marketed and shelved for sale. Games writers minimise the number of genres for simplicity and understanding (Fencott at al [1], 2010).

Game genres differ from film genres as they are concerned primarily with activity, not setting and context as film genres are. Meta-genres are overall genres that describe the main game activities but can encompass gameplay of other genres. For example, the driving game is a meta-genre and games such as Driver that encompass activities from other genres are specialisations of this meta-genre (Fencott at al [1], 2010).

Fuzzy genres are general activity types used to describe activities available in games and use a set of decimal values adding up to a total of one to demonstrate a games reliance on each activity type, allowing bias for a particular activity or activity group in a specific game to be revealed. Fuzzy genres allow distinctions between games that on the surface seem almost the same to be observed (Fencott et al [1], 2010).

Strange Analyst, a software tool developed by Strange Agency, offers yet another alternative to the traditional genre, with the idea that as games are primarily about what the player can do, their interactions, they should be categorised in this way too. To this end, the program classifies games according to the extent which they feature 49 unique activity types such as 'exploring', 'defending' and 'investigating'. Indeed, the activities might be likened to an extension of fuzzy genres and Strange Analyst enables instant visualisations to be created for (almost) any game (Fencott et al [1], 2006).

One can observe a movement of games from a single fixed genre towards the meta-genre Fencott et al [1] (2010) discusses. As Poole (2000) notes “videogame ecology is one rife with inter-species breeding; lines between the genres are gradually being erased” and “large scale exploration games in particular are incorporating ‘sub games’ of different styles within them, as a reward for completing certain sections”. The Grand Theft Auto series of games is the best example of this, borrowing content from role playing, adventure, shooting and driving genres.

2.3.3 Genre Theory Critique

Research into genre and its origins is particularly relevant, as a major aim throughout has been determining the most effective means of categorising videogame contents and genre is currently the most widely used and best known means of content categorisation (Chandler, 2000). Therefore, considering research in this area before embarking on creating a content model was vital. In addition, the intention is to improve on the genre, offering a finer granularity of content classification. In order to build on the categorisation offered by genres it is important to have a thorough grounding in their origins and evolution.

Works by Fencott et al (2010) particularly, demonstrate how videogame genres continue to evolve, highlighting a definite movement towards a greater understanding of games, something enabled and facilitated by the advancing maturity of the industry. Fuzzy genres, allow for a greater understanding than traditional generic modes of categorisation. Meanwhile Strange Analyst (Adams, 2006) presents an alternative possibility for game content representation, in which, games are represented primarily by what the player can do, the activities the game allows such as running, jumping shooting etc. This is an appealing representation, as a majority of games are action-based and the primary focus in any game is player activity and interaction with the game systems.

Both fuzzy genres and activities offer a much finer classification and hence offer greater flexibility than genres. Furthermore, they do not lose their relevance, even if a game possesses several activities. For example, classifying Shenmue as an "action-adventure-beat-em-up-driver-RPG-movie" weakens the classification for each extra genre the game spans. The game spans so many different genres that its generic classification is almost worthless as it gives the player very little indication as to the games content or whether the game will suit the abilities of the player (Fencott et al [2], 2010).

With a database of well over ten thousand games, Strange Analyst is able to plot any game, or selection of games in terms of the balance of activities each game employs and can even plot proposed game concepts against existing videogames.

However, in criticism, one must question, what do terms such as running, shooting, building etc actually tell us about a game (other than these actions are possible)? Perhaps activities boil down game content a little too much and as a result no one activity can offer the same kind of insight into a game that a traditional genre does. However, Analysts real strength lies within the combination of the activities and their individual values that can create a unique profile for any game. This makes Analyst’s representations more formal, even mathematical, an extension of fuzzy genres. This reveals a niche for a complete qualitative model of videogame content.

2.4 Development Models and Methods

2.4.1 Perceptual Opportunities

According to Fencott (2003) *sureties* are "mundane details that are somehow highly predictable, their attraction is in their predictability". Sureties arise from the Virtual Environment (VE) and they include rudimentary things such as lampposts, signs, fences, bins and fuel a player's sense of immersion providing navigational cues, helping the player locate and remember important areas.

Surprises "deliver the purpose of the VE by allowing visitors to accumulate conscious experience from which narratives can be constructed after the visit". The three main types are attractors, connectors and rewards.

Attractors "draw the attention of a visitor to particular places or moments of interest in the VE" commonly noticed at a distance, encouraging the player to pursue the attractor to find its purpose. Attractors carry emotional implications; most commonly, objects a player instinctively recognises have a negative impact upon the player's state (object of fear) or a positive impact (object of desire).

Connectors are basic interface technologies facilitating interaction with the environment and completion of goals. Rewards make exploring memorable and worthwhile e.g. power-ups, bonus areas, mini games, or a beautiful new location to explore (Fencott, 2003). Attractors, connectors and rewards are built up together to form an approximation of the VE's perceptual content as the example below shows.

Attractors	Connectors	Rewards
NPCs (Mystery, Desire) Intention: make sure they are friendly	Basic navigation controls	Activity is observe (peripatetic) Reward is 'connectors' to help complete mission

Fig 6. Perceptual Opportunities sample table. An extract of the perceptual opportunities a player is experiencing from a scene in the FPS game Unreal Tournament (Epic, 1999).

2.4.2 Qualitative Design Models

Fabricatore (2002) collected player discussions whilst playing a variety of video games, with their comments used to form specific concepts about the games and relationships between the concepts. Guidelines were created from this. A hierarchical set of concepts were discovered and their relations plotted, these included entities; identity, equipment, behaviour, energy, and scenario, which is further sub-divided to; view, spontaneous changes, transitions and interactions with enemies.

The action genre was chosen for its popularity and historical relevance, as the first gaming genre. The study examined players ambience information (ability of the game to create atmosphere capable of holding the players attention) and functional (the players ability to control and interact in the game world). The resultant playability design guidelines include prescriptions developers should follow for positive gaming experiences and recommendations that benefit the game experience but are non-essential. A democratic majority system decided the guidelines worthy of inclusion.

Fabricatore's (2002) work provided an early and major inspiration for this research. In the hierarchically organised set of prescriptions and guidelines presented, the research comes very close to reaching a complete model for videogames. Indeed, parallels between the research and Fabricatore's works can be seen, both allow the videogames contents to define the model and both use hierarchy for the organisation and differentiation of sections of the model.

The main limitation of Fabricatore's (2002) work is that the model is restricted to a single genre, albeit the action genre, the original and most popular genre, as Fabricatore states. Nevertheless, this does restrict the scope of the investigation and limits the general applicability of the model. The proposed research surpassed this by considering a total of ten mainstream gaming genres (as defined in 1.6) aiming to account for the vast majority of mainstream console and computer games.

2.4.3 Quantitative Models

Ip and Jacobs (2004) favour a statistical quantitative approach featuring detailed measurement of criteria across a selection of games from the rally subset of the driving genre. Games were chosen of different styles (arcade and simulation) and of differing quality (good, average and poor) to judge the effect game mechanics such as acceleration and braking times, loading time etc have on quality of game experience.

A definite need for a method for games development is identified in contrast to Fabricatore (2002) who favours a general approach offering greater freedom and potential for interpretation where findings are diffused via suggestions or guidelines.

Ip and Jacobs model certainly holds great value for developers as it offers the potential to take apart the games of this genre and see what makes one better than another to players. In criticism, the model only considers a fairly narrow range of criterion e.g. loading time, handling, max speed etc which risks valuable data falling through the cracks i.e. aspects of a game the model does not evaluate. Although one could argue this is always a risk in a wholly quantitative model. Furthermore and much like Fabricatore's model, it restricts its focus to only one gaming genre and hence could not be applied outside of the genre it treats. Again the proposed research has addressed both these issues featuring a qualitative approach which spans all major gaming genres.

2.4.4 Heuristic / Rule Models

Desurvire, Caplan and Toth (2004) present a heuristics for playability model. Literature for productivity and play testing heuristics was tailored for use on games, important, as needs of game interfaces do not align directly with productivity applications. Whilst games, like applications, must have an interface where the basics can be learnt quickly, the game should not give everything to the player immediately; true mastery of the control system should take time.

The overriding goals of a productivity application are immediacy and ease of use, whilst a game must provide entertainment and challenge. For the purposes of the study, it was interesting to consider how differences between games and productivity software highlighted above impacts on how games use tropes as understanding facilitators compared to how applications use them.

As Marcus (1998) attests, metaphors are a known understanding facilitator in computer applications, even used in the Windows desktop. However, for the purposes of the study it is interesting to consider, whether their usage will be as widespread in videogames, where immediate mastery is not a priority?

2.4.5 Development Model Critique

The research of this section whilst modest in scale is of great importance and direct relevance to the study. The research followed in the steps of Fencott et al [1] (2010) and Fabricatore (2002) in presenting a new method of videogames categorisation, making it essential to have awareness and appreciation of existing work. Research owes most to qualitative works of Fabricatore (2002) and Fencott (2003) as opposed to technical approaches of Ip and Jacobs (2004) and Desurvire, Caplan and Toth (2004).

Although impressive in execution and depth, Fabricatores (2002) work is limited by its focus on just one genre and hence cannot, in its current state, compare to a complete content model this research proposed. Therefore, the model will build on the scale of Fabricatore's work, whilst using similar qualitative methods, to analyse games, not only of the action genre but across ten mainstream gaming genres (discussed in 1.6). This gives the model a level of cross genre applicability which Fabricatore’s and IP and Jacobs work lacks.

Like Fencott's (2003) Perceptual Opportunities, the model was created, validated and used in the investigation of specific videogames. However, in describing an entire game, Fencott’s Perceptual Opportunities were quite limited. Instead, it was better suited to describing a specific gameplay experience in the eyes of the player. One might liken it to categorising gameplay experience through the use of specific descriptors e.g. container, reward etc rather than categorising a complete game in the same way genre attempts to.

Like Fencott et al [1] (2010), the model acknowledges the expressive limitations of traditional genres and proposes a potential solution to this problem. The actual component of the research had more in common with the concept of fuzzy genres (Fencott et al [1], 2010) in that their aim was to surpass the expressive potential of traditional gaming genres.

2.5 Emotion, Enjoyment and Immersion Models

2.5.1 Emotion and Enjoyment

Lazzaro (2004) presents analysis of emotions, discussing how games inspire positive and negative emotions with concepts of easy fun; sheer joy of playing, interacting with stimuli therein, and hard fun that involves overcoming obstacles and becoming better at specific tasks to build a personal sense of triumph. The four keys to emotion are internal experience, challenge and strategy, immersion and social experience.

Sweetser and Wyeth (2005) propose a model of player enjoyment with eight elements; concentration, challenge, skills, control, clear goals, feedback, immersion and social interaction. Flow is the basis. A ‘flow’ experience is something a person will do regardless of risks or dangers. To achieve ‘flow’ state games must maintain player concentration by providing a high workload.

Yet challenge must be balanced, it should never be unfair or insurmountable and the player must feel their role is important and should not have to consult the manual so a tutorial level is recommended, yet, help should not be too obvious or it shatters immersion. Multiple strategies for success should be possible and the game environment should be reactive, maintaining changes made.

Koster (2005, pg 40) presents a number of interesting observations on the relationship between player and game, considering how a game stimulates the player's brain encouraging continued play by rewarding player achievements. Fun is defined as "a source of enjoyment" This can happen via physical stimuli, aesthetic appreciation, or direct chemical manipulation" ultimately one could surmise "Fun from games arises out of mastery. It arises out of comprehension. It is the act of solving puzzles that makes games fun." Our bodies reward us for learning and successfully mastering something with the feeling of pleasure. Here Koster (2005) relates Crogans (2004) chained aporias and epiphanies to a facilitator of the games entertainment potential.

Sweetser and Wyeth (2005) discuss how a large investment of time results in an emotional connection to the game. Games should make interface and control scheme appear invisible. In semiotic terms: "Games should make players forget that they are participating through a medium".

Vorderer (2003) discusses competition and how successful actions such as defeating an enemy, reaching a goal, finding hidden treasure etc spurs player on whilst increasing enjoyment. Being defeated may cause the player to give up but even if player continues, e.g. to validate the time they have already invested in the game by seeing it through to its conclusion, this is at the expense of some enjoyment.

Work by Rouse (2001) provides insights into what motivates a player to play a particular game. Five major motivating factors were established as challenge by being present in an environment player has control over, self-satisfaction by completing objectives, emotional experience from reaction to in-game events and fantasy experience by seeing the world through the eyes of another person.

Lauteren (2002) gives aesthetic analysis of videogames. Myers (2004) defines aesthetics thus "Aesthetics is most concretely the study of the human senses or that which livens or awakens or gives pleasure to the senses." Videogames are justified as playable texts, borrowing from semiotic theory they are mediated sign systems with signifier and medium for carriage. However, key authors such as Espen Aarseth (1997) specify verbal content as a key feature of a text, something many games lack.

A model of pleasure in games is defined and justified through its integral nature to the game and tight association with game mechanics. Pleasure in games is categorised into three types; psychoanalytical, social and physical.

Ravaja et al (2004) applies psychological research to videogames, examining emotional response patterns generated during gameplay. Emotion is represented with the three components subjective feeling, expressive behaviour and physiological arousal. A dimensional theory of emotion states all emotions can be plotted in 2D space.
The five emotional states chosen for investigation were fear, anger, pleasant relaxation, joy and depressive feeling. Examining emotions associated with a game together as a pattern or profile can be a useful aid to games development, especially at the pre-testing stage. Emotion plays a central role in behaviour, providing meaningful results.

2.5.2 Immersion

A vital part of immersion is the ability for one to become lost in something, to lose awareness of the outside world. Brown and Cairns (2004) provide a reliable definition of immersion with the use of grounded theory, directly relying upon experience from gamers. Immersion was broken down into the three main states engagement, engrossment and total immersion.

Davidson's (2003) paper presents an investigation into game immersion where three levels of player immersion are defined using Ico (SCEI, 2001). Initial involvement is player becoming interested in the game for the first time. It is very uncertain whether the game will appeal and whether player will continue playing. Players need to reach a comfort zone where controls and game actions feel natural and transparent for immersion.

In immersion, the player becomes deeply attached to the characters and game environment, is comfortable with controls, the gameplay mechanics, and enjoys the game experience. For investment, a game must have a smooth learning curve allowing the player get to better in response to increased difficulty. In this state, the player completes the game to validate the time they spent. Only the most well crafted games achieve true immersion, so getting an improved understanding of the facilitators leading to player immersion, is a useful endeavour.

2.5.3 Frustration

Gilleade and Dix (2004) discuss frustration as an indicator for change in adaptive videogames. If a player is struggling to defeat a level boss and has tried a number of times, and failed, how could the game adapt?

Making the boss easier is an obvious response and a novice player would appreciate this but more challenge-orientated players would feel let down, and thus much of the games satisfaction is lost. Frustration can be monitored and when detected changes made so the player may continue.

At-game frustration is a failure to operate the input device in a way that enables progress. In-game frustration occurs when a player cannot understand how a challenge should be completed e.g. becoming lost in the environment through insufficient detail, clarity or visual clues not observable. Frustration must be detected using the existing technologies. (Gilleade, Dix, 2004)

2.5.4 Player Centric Model Critique

The awareness of player's psychological and emotional state such research brings is important for the continual improvement of videogame development by imbuing in developers an understanding of the human aspect. Books like Newman and Simon's (2004) Difficult Questions About Videogames and Fencott et al's (2010) Game Invaders demonstrate that by harnessing such research, major questions can be answered such as why people play, what they look for in games, what frustrates players etc. More can be learned about players and future games can be better targeted to player needs.

This section considered a selection of the growing number of player centric videogame models. It is clear emotion holds a central role within videogames as it is the effective manipulation of player emotional states that enables games to achieve the flow state that permits immersion, something successful games are well known for.

Davidson's (2003) researches into immersion provide great insight by explaining how player's comfort in the game world gradually builds, fostered by the right contextual setting and complemented by appropriate stimuli in the game world.

As Koster (2005) attests, many hardcore gamers report feelings of loss of the awareness of the passage of time, sometimes even of their location and presence in the physical world; becoming 'lost' in the game. Whilst gamers may not acknowledge it as a flow experience, the literature would suggest it at least likely this is exactly what occurs. As a central part of videogames, an effective model should consider the part that player emotions hold in the overall experience and how player needs steer games design.

Finally, research considered frustration, a negative emotion yet as Gilleade and Dix (2004) demonstrated it can be used constructively, to indicate when a videogame should amend its challenge or difficulty, such adaptive properties effectively implemented could bring about much friendlier, more inclusive gaming experiences. Croal (pg 156, 2010), advocating a teacher (developer) – student (player) paradigm, agrees "relationship between a developer and a player should not be adversarial - primary goal - should be not to punish the player nor even to challenge the player, but rather to teach the player."

Although, the detail and minutiae of the models considered in this section falls outside the remit of this research, player centred models are undeniably important and useful as they permit a much wider and fuller understanding of videogames than limiting the scope to traditional or scientific methods would allow. They also afford the player far greater consideration, revealing great insight into the mental processes which gameplay stimulates. It is vital to understand the needs, preferences and knowledge of games players, as it is this group who can ultimately decide on the (financial) success or failure of any game based on their purchasing decisions.

Nevertheless, as a qualitative model and one which is based directly on player or set of player's gameplay experiences it is believed the model will enable game classifications that hold meaning to players and can give useful insight into the suitability of the game. Whilst many of the models in this section enable better understanding of player emotional response to gameplay stimuli, none of them go beyond their main objective to consider content classification and hence reinforce need for such a model.

2.6 Time

Juul (2004) provides a theory of time for videogames with videogames concept of time mapped to time within the real world. The concept of 'game time' is duality of play time (time the player takes to play) and event time (the time taken in the game world). When looking at abstract games such as Tetris (Nintendo, 1989) everything happens while at play, there is no real 'world' to be immersed in, just constant changing of states. Games in the action genre such as first person shooting games proceed in real time; events happen in a realistic period, even the player taking no action has consequences (e.g. an enemy kills the player's character). In turn-based titles, time in the game (event time) only advances after a turn is taken (Juul, 2004).

Time passes faster in strategy and God games than real world time, a whole year in Sim City 2000 passes in a few minutes. Games in these genres generally allow control over the passage of time in the game world through use of speed settings (Juul, 2004).

Cut scenes do not change the game's internal state or allow the player to interact and hence, disconnect play time from event time. Most games feature loading intermissions causing slight pauses in play time. Classic arcade titles such as Space Invaders (Taito, 1977) use imprecise event time where each level is separate without a coherent connection between them (e.g. by cinematic cut scene). As the player moves from one disconnected level to the next, event and play time are disconnected (Juul, 2004).

A model of time in games • **Game state**: The state of the game at a given time. • **Play time**: The time used by the player to play the game. • **Event time**: The time of the events in the game. • **Mapping**: The process of claiming that what the player does is *also* something in event time; a projection of the play time onto event time. • **Speed**: The relation between the play time and the event time. • **Fixation**: The historical time of the event time, if any. • **Cut-scenes**: When the event time is constructed through narration (i.e. told rather than played).	Fig 7. A summary of Juul's (2004) model of time with the terms and brief explanations.

Few authors directly concern themselves with representation and passage of time in videogames and its impact upon the gameplay experience and therefore by virtue of its uniqueness and thorough approach Juul's (2004) work is commendable.

This work also informs the current research and the model features components which do record how the game uses time with regards to player challenge and the relationship between game speed and the passage of time. Furthering research in this, relatively unexplored area was a worthwhile endeavour and is fully explored as selected common forms are described and justified in chapters 5 and 6.

2.7 Representational Dimensions

Videogames are a vibrant and rich medium encompassing content from film, television, literature (text) and theatre. This is not to say videogames have the exact same representational power as all these mediums combined, as Koster (2005) and Fencott et al [1] (2010) attest, the strengths and weaknesses of videogames are very different from those of film or literature. Videogames excel at representing action and activity (the active verbs) yet (debatably) falter at representing deep narrative elements such as emotional exchanges between characters. It is well understood on the other hand that a novel excels at expressing emotion and feeling between characters but the medium of text is, perhaps, not the best for representing actions and activity.

Research by Whalen (2004) explains that despite differences in representational capability it is clear videogames can encompass the main physical attributes of other mediums quite easily e.g. a videogame will undoubtedly have text in its mission briefings, menus, main game HUD, items in the game world labelled, conversations subtitled etc. Film and television aspects can be incorporated directly through Full Motion Video (FMV) either to further the games storyline in cut-scenes or simply to provide ambience e.g. video playing on a TV set in a building the player is investigating or a movie still running in an old abandoned movie theatre.

In addition, even cut-scenes generated via an in game 3D graphics engine still make considerable use of film and television practices and principles in how action is portrayed such as principles of perspective, camera placement and movement etc. One could elaborate to state that games borrow or inherit a limited sample of the codes and conventions of the medium they simulate. So in this case they might inherit the codes and conventions of television and film production i.e. the tropes of these mediums.

Molina's (2007) works on representation demonstrate that to provide a comfortable, useable experience games use different representational dimensions ranging from minimal 1D to immersive 3D depending upon what is represented and uses different mediums depending what is most appropriate. Hence, no game is truly fully 3D as this would often not be practical in terms of implementation, technical resources etc or usability and intuitiveness.

Whilst game environments are now commonly 3D, a 3D HUD is unlikely to be as intuitive as its 2D equivalent and other interface staples such as drop down menu bar would not be as immediate or clear in 3D. Indeed, as Fencott et al [1] (2010) observes, veteran gamers expect certain aspects of a game to be consistent with games of that genre to make use of skills players have invested time in developing, honing and perfecting.

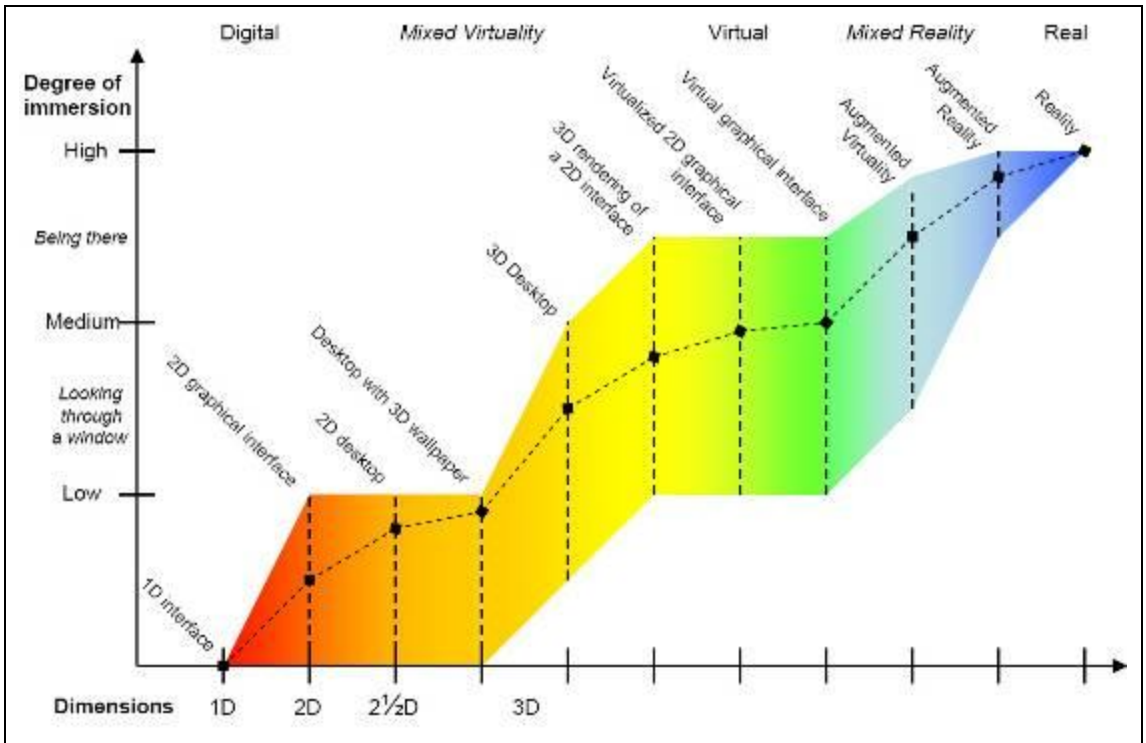


Fig 8. (above) Molina (2007) presents a graph plotting dimensions of representation (x-axis) and immersion (y-axis) clearly demonstrating the increased immersion additional dimensions of representation bring yet immersion must be balanced with practicality and usability or else players are likely to become frustrated.

2.8 Observations and Conclusions

This literature review has considered a broad range of materials relating to the chosen research areas. The aim of this conclusion is to narrow focus to the points most salient to the proposed research and use this to explain the purpose of the proposed research model.

The fundamental building blocks of semiotics as discussed by Saussure and Pierce were considered with an appraisal of prior semiotic investigations. Semiotic investigations of videogames remain rare, this appears a missed opportunity as semiotics has provided a useful way in which to analyse many other mediums. Nevertheless, the lack of study in this area creates an important niche for the proposed research. Indeed, as already discussed earlier in the chapter, videogames were justified as playable texts; they are mediated sign systems with a signifier and medium for carriage. Therefore, semiotic analysis techniques can be applied to videogames with the aim of considering the varied and diverse signs of videogames using tropical analysis (Lauteren, 2002).

Initially, this involved direct appraisal of videogames to highlight and demonstrate the presence of major rhetorical tropes such as metaphor, metonym, synecdoche etc and the part they play in videogames. A deliberate attempt was made to look for tropes other than just metaphor, as research showed this has historically dominated computer software. Nevertheless, metaphors were still tested for, to see if they hold the same prevalence in videogames as in applications (Marcus, 1998).

Links between tropes (other than metaphor) and typical videogame gameplay have already begun to emerge. For example, the way following a chained set of metonyms, to understand the meaning of a statement is like solving the tightly interconnected problems in a Role Playing Game (RPG). It is particularly interesting how the interaction of the master tropes aporia and epiphany seems to present a perfect depiction of gameplay in progress i.e. the continuous problem and solution cycle.

Indeed, in the main study, aporia and epiphany were considered as essential 'core' components of videogames and used as the basis for a new model in which videogames, define the scope of the model.

As the literary review showed, genre continues to evolve demonstrating the growing sophistication of the medium and the improved understanding of players. Nevertheless, the driving force behind this research is the traditional genre and its associated limitations when used to represent the contents of modern videogames such as titles that cross multiple genre boundaries like Grand Theft Auto. Other researchers, such as Fencott et al (2010), have recognised the emergence of this problem and are working towards new modes of categorisation such as extensions to the genre template like the concept of the meta-genre and associated 'sub' genres. Meanwhile, fuzzy genres consist of common game activities, the balance of which adds up to one. This ultimately culminated in the development of the advanced game activity profiling application Strange Analyst (Adams, 2006).

Strange Analyst hinges on the logical idea that as games are primarily about what the player can do, their interactions, they should be categorised by these too. The program classifies games according to 49 unique activity types such as 'exploring', 'defending' and 'investigating'. Indeed, these activities might be likened to an automated extension of fuzzy genres with Strange Analyst enabling instant visualisations to be created for any game in the Strange Analyst database (Fencott et al [1], 2006).

Finally, Fencott provides an alternative method of visualising videogame contents through appreciation of their aesthetic qualities as seen in the Perceptual Opportunities model (Fencott, 2003). Fencott's works, particularly the categorisation of videogames, first with fuzzy genres and then activities, is a model that fits videogames particularly well owing to their interaction-centric nature. Fencott's models are also particularly relevant to the proposed research, which aims to achieve a very similar outcome, albeit with the use of tropes and common forms instead of player activity and interaction.

Whilst it is undeniably logical and sensible to categorise games based on activity owing to their interaction-centric nature, such a method inevitably ignores some important game elements such as what is happening in the game environment, on the HUD, character interaction and item management. Meanwhile, Fencott’s (2003) aesthetic model of Perceptual Opportunities does consider these factors but is somewhat limited in scope as it typically provides a player’s view of a particular section or scene of a game rather than a complete appraisal of the overall game.

Therefore, the proposed research could be seen as an attempt to borrow aspects from both of Fencott's models in order to give a more complete picture of videogames than activities alone can. The model also attempted to include some of the aesthetic values of the Perceptual Opportunities model combined with the application of semiotic tropes.

In terms of models, there is no doubt Fabricatore's (2002) qualitative model of action videogames serves as a major inspiration and will undeniably shape the current research. The thorough execution and detailed hierarchical model Fabricatore presents is particularly impressive. Despite this, some aspects of the quantitative approach favoured by Ip and Jacobs (2004) will be integrated to ensure scientific rigour and enable direct analysis and comparison possible when numerical data is gathered.

The main limitation of Fabricatore's (2002) work is that it considers only the action genre as it limits the scope of the investigation. This research aims to go further by considering a total of ten mainstream gaming genres (as defined in 1.6) aiming to account for the majority of console and computer games.

With the correct procedure in place, it is intended that videogames will actually shape the model providing a content model produced specifically for videogame analysis as opposed to one such as genre which is adapted from the way it is used with other media.

Whilst further consideration of the player centred and emotion driven game models is outside the scope of the research, they nevertheless represent a highly active and progressive area, which has already begun to inform games development. Meanwhile, time and narrative are two areas which are considered during the research as major aspects which have a fundamental place in many videogames.

Juul's (2004) model of videogame time featuring game time and event time was a pioneering piece of work, which offered new insight into an area that has been untouched for many years. Whilst it is beyond the bounds of the study to continue Juul's excellent work directly, consideration to Juul's game time theory will be given when investigating relevant game elements such as how time monitoring is implemented, how sections of game time are divided e.g. by levels etc.

This leads towards the main study where videogames provide a source, from which, with detailed comparison and analysis, shared aspects, are allowed to emerge. These 'common forms' will provide the basis for a videogame content model based on the concept of the literary trope.

In summary, two investigations were completed, the first investigated videogames for the presence of existing rhetorical tropes and map out their occurrence location and the number of each trope is found, a quantitative analysis with some qualitative aspects. Meanwhile the second investigation used videogames as a source of literary tropes which in turn can be used to describe the contents of a particular videogame. Hence, combined these two investigations will explore in depth the potential for a trope-based model of videogames.

3. Rhetorical Tropes in Videogames

The purpose of this investigation is to analyse a limited number of modern games; released between 2000 and 2005, for how they use tropes in terms of interface, HUD, game world and characters. For the purpose of this investigation the tropes considered have been limited to Synecdoche, Metaphor, Metonymy and Irony. These tropes have been chosen because, as usability experts such as Marcus (1998) have found, they are prolific within web and application development and therefore present a reasonable starting point for a study investigating leisure based computer software.

Attention will be paid specifically to the HUD the game uses and information display screens commonly used such as a player inventory or weapon choice screen. Generally more technical screens such as controller options and graphical settings will be ignored as these are not part of the core game play.

To ensure this study is of a feasible size to complete in a reasonable time, the number of games and genres games come from will be restricted. The study will adopt a simple format where each game is introduced with a short synopsis of the experiences the game aims to deliver and the nature of the games content.

Next information about the control system will be provided, particularly if the game breaks new ground here and uses an innovative method of control. Lastly interface the game uses will be discussed. The HUD as well as any additional interface screens such as player health and status, inventory, equipment, magical abilities etc will be considered.

This will naturally lead into a discussion of the tropes the game presents and how it presents them. The reason for this is tropes are most commonly visible in the games interface and HUD but could also occur in the environments or through visual, auditory and tactile feedback.

Comparisons or contrasts with other games will be made where appropriate. For more information, specifically an at-a-glance summary of all results, please see appendix A, while the complete unabridged version of this chapter is available on the CD-ROM.

3.1 Short Game Synopsis

Fahrenheit

Fahrenheit (Quantic Dream, 2005) is a modern adventure game combining a new and innovative control system (where controls are modelled after actions player is required to carry out) with a very strong and tightly scripted story to provide maximum immersion and believability (Navarro, pg 1, 2005).

Fig 9 and 10. Fahrenheit's original, dramatic starting murder scene. The player hides all evidence, including the victim's body. Occasional cuts to split screen increase the tension.

Even the start is unique and somewhat chilling, beginning with the character committing a murder in the rest room of a café for no apparent reason. The player must quickly hide the evidence and tidy the crime scene to avoid suspicion. Much of the game is spent finding out what caused the main character to commit murder and many parts are done under strict time limits adding a constant sense of tension. Even conversations are strictly time restrained, quite unusually for the genre. This puts onus on player to find out as much as possible, quickly. Investigation plays a large part, with two of the three playable characters being members of the police force investigating the murder.

Fig 11. Options available in conversation are shown, player moves pointer up, right or down to select one of the three topics (top). The blue bar shows time passing by.

Final Fantasy X

Final Fantasy is one of the longest running series of RPGs by Square (now Square Enix). The series spanned several generations of consoles, starting on the 8-bit Nintendo Entertainment System (NES) in the mid-eighties (Kasavin, pg 1, 2001).

The latest game Final Fantasy XIII (Square, 2010) has been released on Sony Playstation 3 and Microsoft X Box 360. In the time from the first game to Final Fantasy XIII, the game mechanics, interface and control mechanisms changed to be virtually unrecognisable.

The Final Fantasy games of this generation and last generation have been highly cinematic and emotional experiences making considerable use of high quality, professionally produced, video sequences used throughout the game to immerse the player. Recent games such as Final Fantasy X (Square, 2002) do this in a seamless way with the transition from the high quality video footage to in game graphics being surprisingly smooth and almost unnoticeable in places.

Fig 12. FMV interlude. Although the video is of very high quality, the transitions to the in-game graphical engine are handled smoothly and the change in visual quality is often not too apparent.

Final Fantasy makes good use of conventional RPG traditions and a large part of the experience is exploring, finding new weapons and armour and fighting the varied enemies and lastly becoming involved in the story and character development.

Max Payne 2: The Fall of Max Payne

Max Payne 2: The Fall of Max Payne (Remedy, 2003) is a third person action game. The original game was widely recognised for its stunning graphics and introduction of a novel (at the time) concept of bullet time. Bullet time is slowing down all events around player character to give the player more time to react to dangerous situations e.g. large scale or surprise enemy encounters. The effect is quite similar those of the Matrix (1999) and a number of other movies since then.

Max Payne 2's power is in the emotional, deeply involving story and its high production values and cinematic feel. Once the player learns to use bullet time, great fun can be had in enabling bullet time whilst diving across a row of enemies and taking them out with ease. Max Payne 2's success hinges on how it gives the player the role of an action movie hero. This is enhanced by destructible scenery complete with props e.g. crates, cardboard boxes and explosive barrels, carefully positioned to create mayhem or help in taking out enemies. Indeed, it is not difficult to liken the game to an action movie, where the player stars.

Fig 13 and 14. The game features a number of dramatic scenes, with many locations that could easily be scenes from an action movie. Indeed, the game is made with very high production values giving a cinematic experience throughout.

Max Payne 2 is largely about the action but rewards careful exploration with health power ups (pills), weapon power ups (guns, rifles and grenades) and helpful Non Player Characters (NPC).

Zelda: The Wind Waker

The Zelda series of RPGs are some of the best known and most respected along with the Final Fantasy series. Zelda (1987, Nintendo) began life on the NES in 1986 (Japan) and 1987 (US/Europe) (GameFAQs, 2010). Zelda in many ways is a complete opposite to Final Fantasy. The Wind Waker (Nintendo, 2003) is more focused on direct action and whilst, it has a plot, there are far fewer story interludes. Progression is placed more in player's hands with player choosing when and how to complete quests and exploration of both the sea and the various islands paying large dividends in terms of power ups and optional quests.

Fig 15. From an early stage, player has freedom to explore. This is particularly useful in this game as a lot of treasure is hidden out at sea. To find it the player must first find the relevant map. The game marks important points on the map and subtly guides the player to avoid frustration (Gerstmann, pg 1, 2003).

Final Fantasy's fixed turn based nature means you fight against a set number of enemies taking turns until they are all defeated and (generally) no new enemies can enter a battle. Zelda in comparison is more dynamic, where both enemies and players attack and defend in real time and if more enemies are in the vicinity they become involved in the battle. Zelda is particularly dynamic in its combat system; it is possible to have enemies attacking each other, giving the player a temporary advantage.

Fig 16. Battle in progress. All battles take place in the game environment; the game seamlessly switches to and from battle mode whilst player maintains full control of their character, unlike a turn based game where player can only issue commands in battle mode.

Further differences are seen in how the game apportions tasks and objectives and how much freedom player has in completing them. Generally, in Final Fantasy, the player deals with one or a few tasks in a fairly linear manner, the player often cannot proceed unless they have completed the intended task. Whilst Zelda has tasks vital to the main game quest, there are optional side quests and many can be completed in any order meaning, even length of game is largely up to the player.

Crazy Taxi

Whilst taking on the career of a taxi driver may not sound especially exciting, the brilliant implementation here makes for a classic game where fun is paramount and all out action can be found at every turn. Much of the fun feel is helped by the charming, bright and colourful graphics which still look very solid today. The unique colour scheme gives the game a frivolous, summertime vibe. The game provides a real sense of speed helped by busy roads, where dodging between traffic is a necessity. Controls are easy to pick up without even having to worry about gear changes, RPM or the condition of the car, yet truly mastering controls and perfecting the style needed takes significant time (Justice, 2000).

Fig 17. An action packed screenshot of Crazy Taxi (AM3, 1999). The small yellow $ icons to the left show above customer's heads. Any location usually has a number of potential passengers, so the player must choose who to take. Red or orange icons indicate short journey fares, yellow or green, longer journeys.

Before beginning, the player chooses how long they wish to play for. Normal rules mimic the original arcade machine, where the player begins with about one minute and must remain in the game as long as possible without running out of time. The player is awarded time for picking up passengers and successfully dropping them at their destination.

Other modes allow the player to play for a set time, such as three minutes, five minutes or ten minutes with the aim being to make the maximum amount of money possible. Upon beginning, the player must find a passenger. Passengers are denoted by the coloured ring displayed around them. The player stops within this ring to pick up the passenger. Colour of the ring signifies duration of the journey, where red is a very short journey, orange is short, yellow medium and green is long.

Far Cry

Whilst on the surface Far Cry (Crytek, 2004) may appear a traditional action-based FPS game, it features some deep stealth based gameplay and encourages player to think carefully about their actions. Indeed, this is essential on the harder difficulty settings.

Far Cry should be praised for the unique level of freedom in its wide and open levels but level is perhaps an unfair term, they come across more as complete environments in their own right. This freedom is aided by freeform objectives which give areas to reach and tasks to accomplish but leave the main part of how this is done to the player allowing the player to formulate detailed plans and try out different strategies to find what works best.

Fig 18. Far Cry presents the player with a stunning, lush, green and vivid jungle location that positively encourages the player to explore and discover its secrets. Motion is convincing and natural with the jungle setting teeming with wildlife (PC Zone, 2004)

Another revolutionary aspect of Far Cry can be seen in its vastly powerful graphics engine, a revolution on the games release in 2004 and still compares favourably with games released since. Far Cry was one of the first games capable of creating truly convincing and organic looking outdoor locations and vegetation, something which some modern games still struggle to do. The realism is furthered by huge draw distances which sees the islands extend right into the distance as far as the player can see.

Super Monkey Ball

Super Monkey Ball (Amusement Vision, 2002) is an interesting, fairly original and fresh game where the player controls a translucent ball that contains a small monkey, hence the title. The player rolls the ball around various levels named floors with the aim to reach the goal and collect bananas for score but to avoid falling off the play area as this causes the player to lose a life. The objective of each level is simply to reach the goal positioned at the opposite end of the floor. Each level adds challenge with obstacles and ever more convoluted floor designs and tighter time limits.

The game eschews detailed plot, complex gameplay mechanics and large game environments in favour of fast arcade style pick up and play gameplay from classic titles of the 'golden age' of gaming. The game is easy to pick up and play with the action controlled by nothing more than a single analogue stick (Torres, 2001).

Fig 19. Normal gameplay HUD in Super Monkey Ball. Notice the quarter 'slice' of radar in bottom right corner. The timer in top centre stands out immediately with its use of colour and animated fuse. Completing a stage on time is a major source of the games challenge, hence the reason the timer is signposted so well.

The game can be controlled simply with the analogue stick and so excels in its simplicity, making the game popular in the arcades and the home whilst still requiring significant investment to actually master the control system.

Super Mario Sunshine

Super Mario Sunshine (Nintendo, 2002) is a 3D platform game released for the Nintendo Gamecube. Mario has been Nintendo's mascot character for over twenty five years and is synonymous with Nintendo home consoles, handhelds and the entire platform genre. Mario games have always represented the purest, most enjoyable platforming experiences. Nintendo was one of few developers able to smoothly handle the transition to 3D with Mario 64 (Nintendo, 1996) (Gerstmann, 2002).

Super Mario Sunshine takes place on a tropical island. The game features level structure and designs similar to its predecessor, Mario 64 but with notable changes such as Mario's water jet which forms a central part of the gameplay, used as a tool (to clean up level buildings and walls) and a weapon (to defeat enemies and bosses).

The game offers the player huge environments to explore and great lastability as each level has several different and varied objectives, meaning each level must be played several times to unlock all the secrets it offers.

3.1.2 Methodology

The games chosen for investigation in this study were selected to provide a representation of the quality and diversity of (then) current and major mainstream videogame releases on home computer and console formats available when this study was originally conducted in 2006 and into 2007. The games investigated were all released in the five year period between 2000 and 2005. The formats investigated were Microsoft Windows PC, Microsoft X Box, Nintendo Gamecube, Sony Playstation 2 and Sega Dreamcast. However, though recorded for accuracy, platform is not considered of primary importance as some of the games considered were multiplatform and the platforms investigated all (barring PC) have fairly similar technical capability and input / output systems.

As each game was investigated in some depth, a high level of familiarity with the games levels, menus and gameplay mechanics was required to ensure that sufficient data could be collected.

Therefore, another reason these games were selected was because the researcher already had significant prior experience of them and had completed at least one entire play through of each game and therefore had sufficient experience of the games to make important judgements when investigating them for their trope presence.

Although it was unfortunately not possible to span all ten mainstream genres (as defined in section 1.6) an attempt was made to cover at least a selection of major videogames genres with historical significance such as the action, platform, driving and first person genres.

When conducting the investigation, a game was chosen and during gameplay occurrences of tropical elements was recorded with short explanations of where the trope occurred and the circumstances surrounding its occurrence. In addition, a numerical account of each trope occurrence was kept to facilitate basic statistical analysis. This simply recorded for each trope the type of trope (metaphor, metonym, synecdoche or irony) and where within the game systems this trope occurred (interface/options, HUD, between character(s) or within the game environment). Each instance identified constituted a score of one. Unlike the later common form study, this investigation did not attempt to ascribe a strength indication to trope presence so any instance of one of the four tropes investigated for was scored as one for the relevant trope.

Totals of trope usage for each trope and for each game were recorded and this allowed further analysis such as determining trope usage within one of the genres investigated. The chapter describes the investigation using the original notes taken during the investigation but aiding readability with additional sectioning based on the types of tropes discovered. The close of the chapter presents the final results of the study and demonstrates the numerical data gathered and the profile data taken for each game such as aggregate review scores and typical developer, platform, age certificate etc data.

3.2 Energy and Status Representation Tropes

3.2.1 Energy and Health Representation

In Fahrenheit, on the HUD, player status meter represents mental health and well being of player character. This bar goes up to 100 to represent a neutral (good) state and goes down to represent extra stresses and fears of the character.

Fig 20 and 21. State meter in Fahrenheit, showing (mental) well being. Starts full and decreases as traumatic events of the game's varied situations combine take their toll. If the bar gets too low, character may breakdown e.g. see visions or not respond to controls.

This could be seen as a synecdoche of the player's mental status and well being as it cannot show all emotion the character experiences but provides a game-like approximation.

The Max Payne 2 interface is simple and uncluttered, so the player can see vital information such as energy level at a glance, important because of the fast pace and high action level. At the bottom left, energy is represented as a line drawing of the character. This drawing fills up in red as the player takes damage. This is a metaphor of blood and bleeding to show the character is damaged or injured.

Fig 22. Player energy indicator, which fills in red as player character is damaged. Next to this is the bullet time indicator. Shaped like an egg timer this empties as bullet time is used up.

In Max Payne 2, Painkillers allow the player to replenish a little lost energy with each taken. When the player collects them, they display next to bullet time indicator. The number displays next to them. In the interface, they display as a small box with a cross to represent first aid. To reinforce this metaphor of restoring health and physical status, taking them results in blood in the character diagram receding.

In Zelda: The Wind Waker, hearts are used to show health level. This is clear and quite common use of synecdoche, where part (heart) is representing whole (character). Initially, the player starts with three hearts but this can be expanded by being awarded extra heart containers.

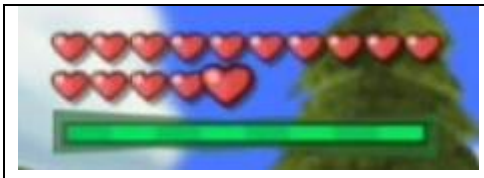


Fig 23. Available energy shown in hearts. Initially, player only has three hearts but finding treasures and completing quests allows it to expand.

Like in other games investigated, Far Cry uses conventional, established connotations of the colours red, orange and green to provide immediate feedback to the player. The changing colour of dot reflects how well player is hiding from detection by the enemies and hence represents player's level of stealth and camouflage in the environment and could also be seen as a metaphor for these elements. These features are clearly unrealism's added to help the player and would not display on a real compass. These features are similar to information seen on a radar screen meaning the compass shares metonymic functions with radar providing a combination between radar and compass.

At the bottom right are three bars grouped together, one below the other with each bar a different colour. The top bar is filled in red to represent player's health and decreases if the player takes damage. A cross icon to the right, reinforces this and provides a metonymic link to concept of health. The cross is used very commonly to denote health in a range of games. Below this is the players armour bar. This displays orange but only fills in when a player collects an armour power up. This will protect the player from being hit until it has depleted. The icon to the right is in the shape of a shield metonymically representing concepts of armour and protection.

Fig 24. The energy and status bars which display permanently on the HUD. Top is energy in red, middle is armour (currently empty), bottom is stamina in blue.

The last bar fills in blue and represents the player's stamina for sprinting. This bar depletes when the player sprints to represent the player character becoming tired and fills up gradually whenever the player is not sprinting. The health and power bars flash rapidly when a player picks up a health or armour power up, becoming attractors to draw the player's attention to their improved status. The flashing could be considered a metaphor for growing wellbeing and improvement of health in the player character. The flashing could also indicate the unexpected and almost magical nature of the characters sudden improvement in health.

In Super Monkey Ball, monkey head icons represent number of lives player has left. This is a clear use of the synecdoche trope where the head of the character is used to represent the entire character. If all lives are lost the player is given (a limited number of) continues. The continue screen displays showing the text 'continue?' and below that 'Yes' (left) and 'No' (right). Initially the monkey looks very sad to have lost the game but will then cheer up and clap the player if they choose continue.

In Super Mario Sunshine, Mario's energy bar is represented by the icon of the sun with each sun ray being a piece of energy. At the top the word life displays to signify this. As with many parts of the interface, this only displays when required e.g. when player lost or gained some energy.

Fig 25. In game HUD display. Lives display top centre and energy to the left. Bottom right is a realistic representation of the water gun the player carries to show water level (fills in blue). Top left are collectable statistics (shines, blue coin, gold coin).

At the top centre is player lives indicator, which displays text 'Mario' angled around an icon of Mario's head times the number.

3.2.2 Stamina and Vehicle Status

Fig 26. In Crazy Taxi, the player has successfully taken a passenger to their destination within the allotted time. This game features particularly strong use of colour as a reinforcing concept. "Speedy" is displayed in green to denote player has done well. Yellow is used for average and red for bad performance.

In Far Cry, vehicles can be driven or destroyed such as jeeps, trucks, dinghy's and motor boats. Whilst vehicles such as jeep offer some protection, player can still take damage as can the vehicle shown by a car icon that depletes to represent damage to vehicle. If the vehicle is destroyed, it explodes damaging the player if nearby and most likely killing them if still inside, making it safer to leave a heavily damaged vehicle. Car health icon is a metonym of the car and whilst not realistic, its connection with the car is immediately visible. Likewise, the car itself is a metonym of a real car as it realistically resembles it and provides some protection like a real car and enables the player to better explore.

Fig 27. The dinghy is just one of a varied selection of vehicles the player has at their disposal in Far Cry.

When underwater the sprint meter changes to a breath meter showing how long player can stay underwater. It depletes while the player is submerged but will replenish as soon as they emerge. This meter demonstrates the player's ability to hold their breath. Therefore, this meter is a metaphoric representation of the characters lung capacity e.g. how long they can remain underwater without sustaining damage.

Fig 28. Player is free to explore as desired underwater and on land, diving is often an effective means of losing pursuing enemies although player must resurface for air.

3.3 Environmental Tropes

3.3.1 Collectables

In Final Fantasy X, chests denote special items. Other than purchasing or receiving items, the chest is the only way a player can collect items. After a while it becomes almost a 'stand in' for the item itself. The idea of chest standing for item is an example of metonymy, as chests are related to items; they are perceived as containers of valuable items as they share this purpose across nearly all RPGs (TVtropes (1), 2010).

Fig 29. A chest. These contain rare and valuable items, although the item itself is rarely seen, instead a small dialog box tells the player what they found.

In Zelda, there are various objects to collect in the environment. These are generally basic power ups such as rupees which have monetary value, hearts to restore lost energy and ammunition for the various types of weapons player gains, including arrows for a bow (later imbued with elemental properties), bombs player can drop etc. Rupees use colour to denote value. In Zelda, a green rupee has value of one, blue five, yellow ten. This could be considered a metonymic likeness to the British financial system, where differently marked notes and coins have different monetary values associated with them.

Fig 30. Here the player discovers a valuable purple rupee in a chest. Rupees are not just found in chests though; they are common in the game environment, often simply hidden in grass or bushes.

Just before disappearing, objects flash to communicate their value and impress on the player the importance of quickly collecting them. Clearly objects don't just disappear into thin air in the real world! Hence, this is an obvious unrealism to provide extra challenge and to avoid overloading the host platform by potentially allowing hundreds of items to build up on the ground. It could be seen as a representation of how it is easy to lose small objects over time (especially if just left on the ground). This is a somewhat tenuous link and therefore would be a metaphor.

Fig 31. Objects are commonly hidden in long grass or bushes. They only display for a limited time before they disappear.

In Crazy Taxi, at the top right of the screen an earnings meter will display when the player gains or loses money which displays how many dollars the player has.

Above the fuse, In Super Monkey Ball is a banana counter that shows how many bananas the player has collected. This is displayed in yellow connecting it with actual banana's by colour and is shown as a number out of one hundred. The yellow used for the number of bananas uses metonym in its colour association. Upon collecting one hundred bananas, the player is awarded an extra life and the counter reset.

3.3.2 Events

Final Fantasy X features bonus games and optional quests to allow the player to take a break from the main game plot and quest. These are often races or battles against other NPCs with unique rewards attached, such as hard to find items, weapons or armour, making them seem more worthwhile to the player.

Fig 32. In Super Monkey Ball, completing a stage rewards the player with a rainbow coloured goal sign and a shower of coloured confetti. Celebrating stage completion like this helps reinforce positive player action, encouraging player to continue even when game gets harder.

Upon reaching level goal the word goal is shouted, reinforced by large goal text appearing in bright rainbow colours and bright colourful confetti falling around the character.

To continue the metaphor of each level being a floor with further floors both above and below it, after level completion, the monkey ball zooms up into the sky and the next level is clearly visible above. Also in normal play, it is sometimes possible to see floors completed below and future floors above. Upon completion, a short replay plays the last few seconds of the level before the player completed it. This could be seen as a small synecdoche of the level the player just completed.

At stage start, a camera zooms in on the start line of the stage, highlighted by a large red arrow and the text ‘start’. For the first few seconds the player gets a short overview of the stage and thus a little idea of what to expect. This is a synecdoche of the stage (to come) as the camera most likely will only show a small portion of the level before it begins.

Fig 33. Bonus rounds are large expansive, safe zones, danger is minimal maximum collection of bananas is the only objective.

For every five floors completed, the player is presented with a bonus floor. Here there is no danger of death and the only aim is to collect as many bananas as possible and reach the level goal before time runs out. At the bottom, number of bananas left to collect displays in large white bold text. This is important, because if player can collect all bananas and finish the bonus level they are given a perfect award that adds to overall score. The bonus level itself could be seen as a metaphor for a power up as the bananas available could potentially allow the player to gain an extra life.

3.3.3 Terrain Features

The unique story telling of Max Payne 2 can be seen in some levels which are based on dreams or memories the character is experiencing. These are particularity interesting as various mechanisms are used to disorientate and disturb the player.

Some examples are the walls which, warp, bend and distort to emphasise the ethereal nature of the environment and fast movement causes the screen to blur. Audio too, plays a large part, for example, at the beginning in the hospital dream/memory various voice snippets (which appear later as the lead character recounts his memories) play out apparently without any obvious speaker or reason. Good use of music enhances this unnerving effect.

These dream sequences show a unique way of using the game environment by twisting and distorting it. It is interesting to note how enemy encounters, whilst the player is in dream state, are very rare and environment size is small to avoid the player becoming lost, which could happen as a side effect of the disorientating dream effects. If these are examined in isolation, they could each be considered synecdoches of dreaming as each represent concepts, we consider, consistent with being in a dreamlike imaginary world.

Fig 34. One of the dream levels. As many of the effects are only seen with motion it is hard to demonstrate in a single image. However, the warping on the wall and in reflection gives a reasonable idea of the effect. As the character walks, this effect becomes pronounced with motion blur too.

In Far Cry, natural terrain features such as foliage and rocks not only provide a visual spectacle, but provide camouflage too, allowing a player to advance stealthily, unseen, into enemy encampments. These natural terrain features could actually be seen as a metaphor for camouflage and protection from enemies.

Fig 35. Terrain features such as tall grass, trees and bushes can act as camouflage and allow player to formulate enemy engagement plans, sneaking up on unsuspecting enemies undetected.

3.3.4 Interaction Cues

Environmental cues also inform player when they are entering bullet time such as a whooshing sound when starting and leaving bullet time. Whilst in bullet time, colour level decreases to muted sepia style. The purpose is to visually communicate the change.

Fig 36 and 14. The effects of bullet time. The player can perform various leaps and dives, and then flick into slow motion allowing them to aim and fire the gun during the dive.

The environment is quite reactive to changes in player status. Indeed, the reduction in colour could be seen as visual metaphor for the slowing of time that bullet time induces. In a similar manner, when the character dies, the screen turns bright red. This remains consistent with the character health icon where the icon turns increasingly red to represent decreasing health and increased damage via metaphor of bleeding and blood loss.
In Zelda, to help the player in using ranged weapons such as bow or boomerang, the game displays small targets where player is to use them. This small unrealism is of great help in giving the player a clue how to progress. The targets represent (simply) the kind of targets found at a shooting range and are there to attract the player to shoot a long range weapon at them. Therefore, a metonymic link could be assumed.

In Crazy Taxi, long journeys have greater rewards, but are harder to do in good time. The colour of the ring surrounding the passenger is a metaphoric representation of the time needed to get the passenger to their destination.

Fig 37. Passenger destination is always surrounded by a green border with a large arrow pointing at the centre of the destination.

The passenger's destination is surrounded by a large green border. This makes the destination obvious to the player even from a distance as they approach it. Stopping anywhere within the (large) highlighted area is acceptable. The outlined green boundary is a metaphor for the destination.

Roads are bustling with traffic. Bumping into traffic annoys passengers and reduces the players tip, but traffic can be used to the player's advantage. Quickly dodging in and out of moving vehicles gives the player tips, displayed as $ icons with the amount next to them. The amount awarded goes up as the player dodges more vehicles in a row, however just one crash breaks the chain. Jumps result in bonus cash, especially if the player jumps oncoming traffic. The $ icons clearly are a reward mechanism showing the player they have gained a monetary reward and hence could be seen as a direct metonym for money.

In Far Cry, helicopters are one of the toughest types of enemy the player faces in the open outdoor levels. In some cases, they block player progression completely, such as towards the end of the dam level, before the player can gain entry to the satellite bunker or after the player has blown up the boat. Here the player is not allowed to continue until they have eliminated the enemy and so the helicopter is more like a traditional level boss or guardian. In these instances, the helicopter becomes a metaphor for end of level guardian. The helicopter like many enemy vehicles is an object of fear, a serious threat to the player.

3.3.5 Vehicles and Craft

Fig 38. In Far Cry, four by four vehicles are by far the most common vehicle for the player to drive, regularly found on the island, particularly in enemy encampments. However, the player can also sail boats and ride a hand glider.

At various points, the player can commandeer equipment and vehicles, often in the form of drivable four-by-fours but there are also some unique hand gliding sections. Vehicles could be seen as an extension of the games reward system, they often make crossing parts of the game environment faster and more enjoyable and offer protection and increased firepower. They usually allow the player to do things they could not normally do e.g. land safely from the high mountains on the hand glider, quickly cover rough terrain in the buggy etc and provide some extra protection from enemy gunfire. In this sense, the vehicles could be seen as a metaphor for the more conventional power ups such as health and armour power ups, which also feature in the game.

3.4 Character Tropes

3.4.1 Player Character Interaction

Fahrenheit includes unique ways of interacting with game world and dealing with the (regular) stressful situations. These are primarily mouse driven and used mainly in investigation scenes or getting player character to undertake a particular action. This involves holding the left mouse button whilst pulling the mouse in a direction. For more complex actions such as climbing a wall, one might pull the mouse in a direction and then rotate it to represent how the character would move their limb in real life. Careful use of this, even for simple actions such as opening a door, does allow a greater sense of immersion to occur. This feature represents a metonymic link between the (physical) action the player character performs and the directions the player moves their mouse.

Fig 39. Conversations and simple physical actions are invoked with moving the mouse in a direction. More complex actions might involve rotation e.g. turning a door handle.

A different interaction scheme is used for 'quick time' action sequences where the player must quickly press a specific sequence of buttons in a very limited time to prevent the character befalling a catastrophe. Level of success is shown by the actions that play out on screen. For particularly strenuous actions, the player hits two buttons continuously to represent the exertions the character would feel. This is use of metonymy again; the relatively minor physical exertion of hitting two keys simultaneously represents the, much more significant, exertions the on screen character performs. Hence, this could be seen as a synecdoche too i.e. only part of what the character is doing on screen.

Similar interactions have been seen in other past games, namely the Shenmue series for Sega Dreamcast, which too simulates a number of (minor) actions to enhance the believability of the virtual world (Fencott et al [2], 2010). However, there is no doubting the innovations Fahrenheit makes and its progress in advancing the adventure genre with effective controls and use of narrative. However, the game has some problems e.g. player attention needed to mimic the button presses in action sequences means the player can miss finer details in on screen actions being played out. Hence, some of this advanced narrative may pass the player by. Yet, as Lindley (2002) notes, gameplay and narrative are common conflicts in videogames.

The game makes heavy use of iconic representation throughout. In the mouse based interactions, a stick figure in pose shows interaction that would be triggered. When the player can switch between multiple controllable characters a small picture of the character is displayed top right of screen.

The game character is a realistic and dynamic representation, the character's appearance changes dramatically to represent things that happen to the player through the game. An example; early in the game, before committing the murder, the character slits his wrists. Therefore, when the player controls the character he has bloody wrists until he can clean them and apply first aid. The character is an iconic representation and appearance determines state of the player character in terms of mental state and general health.

This could be considered a synecdoche, as the physical appearance of the character is displaying the character's health and general state of well being etc.

Fig 40. Far Cry begins with the character navigating an underground network of caverns, eventually breaking out into the sunlight. At set occasions the player gets advice from another character via phone.

Due to the game being first person it is not possible to see the character under control in normal gameplay. It is clear the character controlled is athletic and capable, from the wealth of moves available. The character can crouch and go prone, throw rocks and grenades to distract the enemy, sprint, jump, strafe and lean around corners.

If left, the character's hand moves gently to represent the character taking breath and after a while of inactivity, the character makes a more obvious tilt of the weapon as if showing their anxiety of the situation or for the player to continue. This motion could be seen as a synecdoche for normal human activity in that hand and its movement display a few realistic human qualities.

In Super Monkey Ball, to demonstrate movement, the monkey ball subtly changes colours as it spins and the monkey’s feet can be seen moving in time with the speed of movement of ball it is encased in. Both the changing colours and feet moving are metaphors for movement and the concept of motion in general.

In Super Mario Sunshine, much of the game involves cleaning up areas covered with paint, using Mario’s new water jet back pack system. If Mario steps in the actual paint it will cover him and stay on his clothes for a while but if he gets to some water he can quickly wash it off. In quite an impressive effect, you can actually see the paint dissipate into the water. Mario is an athletic character and generally is able to climb any trees or poles to get a better view of the environment. When diving underwater Mario’s life meter turns blue to represent an air meter as Mario spends more time underwater it will decrease as with the health meter but Mario will not lose any health so long as he resurfaces before it is completely depleted.

3.4.2 Non Player Character Interaction

Final Fantasy X introduces Aeons; special creatures the player calls into battle to shield the main characters and unleash devastating special attacks. Developing Aeons to improve stamina and strength is a major task.

Fig 41. The impact of a devastating Aoen special attack unleashed on the enemy.

In Final Fantasy, NPCs are of great importance with dialogue guiding the player. Merchants allow player to buy essential supplies for coming battles, NPCs become a source of knowledge and power in terms of healing items, powerful weapons, defensive armour etc they allow access to. From this perspective, NPCs could be considered a metaphor for power ups.

Fig 42. Example of how conversational choices display during a conversation with NPCs. The selection of an option results in further dialog boxes with dialog related to the player's choice.

In Crazy Taxi, passengers are fairly realistic models of real people and often the character outfit and type will affect where they want to go e.g. a priest will often ask to go to the church, kids will want to go to KFC, teenagers to the record store etc. This shows that even the characters through common stereotype usage help the player in knowing where to go. The link here is mostly metonymic as the character type to location mapping is generally quite tight e.g. priests always will want to go to church.

In Super Mario Sunshine, when starting, Mario starts next to the plane he came to the island in with princess peach. There are many people Mario can talk to for more information. Upon talking to a character, their dialogue appears above their head in the form of white text with blue background. The text curves around character forming a semi circular arch. This feature is both a novel and attractive way to display character dialogue whilst automatically identifying the character it came from. Right of text a small circle displays, if the circle is flashing that is the last line, but if it is an arrow then the character still has more to say.

Fig 43. Image of character dialogue between Mario and one of the villagers. The camera zooms in on the conversing characters with text appearing above the relevant character.

Upon talking to a NPC the camera shifts to focus on the NPC facing towards Mario. To indicate the NPC is talking its arms move and its mouth opens and closes in talking motion. To indicate Mario can interact with an NPC (or object) a bright red icon appears with the button the player should press to interact. The colour shown matches the button on the joypad, showing an accurate iconic representation.

Mario can also interact with some NPCs by jumping on them such as the toadstool people or most of the natives to the island.

The Fahrenheit HUD is unique mainly to accommodate the innovative control methods. The main interface areas are top of screen to display conversation options and other mouse activated interactions, whilst bottom of the screen displays the coloured panels representing keyboard keys in fast action sequences. To avoid a cluttered screen, only information directly relevant to the player at that time displays e.g. player status panel will display when player does something that changes status. Mouse actions or conversation options only display when actions can be performed and while conversation is in progress.

3.5. HUD Tropes

3.5.1 Battle and Action

In Crazy Taxi, at the bottom right of the screen is a simple auto transmission gear display with a D for drive and an R for reverse. When active the D lights green and the R lights red. Clearly this is a metonymic representation of the gear indicator found on an automatic car. Other than this there are no traditional driving game features such as speedometers, RPM meters or circuit maps making for a simplified game to pick up and play anytime for minutes or hours.

Fahrenheit strikes a good balance of giving sufficient feedback without the HUD ever becoming seriously cluttered or confusing. E.g. when required to rapidly press two keyboard keys simultaneously, a bar displays in the centre of the screen showing how fast the key press rate is registering, so player can see if they are reaching level of speed required. Central placement of gauge directly in field of view denotes its importance.

Fig 44. The L to R bar (bottom) shows the player's key press rate in response to the quick time event. The player must ensure constant rate to maintain the optimal position e.g. centre point.

Speed bars get larger to represent a higher key press rate. Some symbolic representation is used as brief one or two word summaries are used in conversation options and the coloured bars that flash to tell player what key to press in action sections are symbolic, requiring pre-existent understanding, as without understanding of how they map to buttons on keyboard or game pad, they would be meaningless.

Fig 45. Interaction prompts can be subtle as a flash of colour in direction of incoming attack, for example. Some knowledge of videogames and their control system is needed for a player to know how to respond, especially in timed sections.

Careful strategy and planning is required in Final Fantasy X's larger battles and a realistic understanding of the characters abilities is important against harder foes. Each character has one unique special (overdrive) move, which requires interaction from player, such as mimicking a series of button presses or rotating the analogue stick quickly. The power of the attack is related to how well a player accomplishes these tasks, making battle outcomes less predictable. This control scheme itself is metaphoric, specifically using metonymy in terms of linking player's ability (to perform specific action) to the physical ability and attack power of player character.

Fig 46. Here player is fighting a boss battle. Note the turn indicator to the right and energy bars below it. On the left are combat options with special overdrive attack at top.

These overdrive moves are activated when a character has taken a certain amount of damage from foes. This is indicated with a bar which increases to full to indicate overdrive is available. This is a metaphor for the increasing power, strength and anger of player character.

Fig 47. A Super Monkey Ball, game in progress. Bottom left indicates the floor or level the player is currently on. The two letters left denote difficulty; the 'BE' referred to here, indicate this is a level on beginner mode.

Upon starting a level the floor number will display in the centre of the screen as text which comes into the screen left to right one letter at a time. At the top left of the screen a scene indicator displays in white. At the bottom left, a speed indicator shows speed the monkey ball is rolling in miles per hour (MPH). At bottom is the difficulty level indent as a square icon with the two letters displayed on it e.g. BE. The two letters used to signify the difficulty are a metaphor for the actual difficulty level the player is on. To the right are the text floor and the number of the player's current level.

3.5.2 Maps and Navigation

Fig 48. In Crazy Taxi, on entering the car, the passenger tells you where he/she wants to go (left) and game time increases to allow time to reach the destination. Passengers only enter if you stop close. If you are not able to pull up right next to passenger, they will get in but complain about your parking

On passenger entering the car, they give destination and a small postcard pops up on the screen giving a snapshot of the building with distance displayed below it. This is clear use of synecdoche where a part of something is used to denote the whole, part of the building in the snapshot means the whole building. A large arrow displays when a passenger gets into the car. This displays at top of screen and always points (as the crow flies) at their destination. The arrow forms a metaphor for a basic compass, like a compass points' to the north the arrow will always point to the player's destination.

On Far Cry's HUD, a compass displays on bottom left. This shows the character as a dot in the middle. Directional indicators: N, NE, E, SE etc display around the outer ring of the compass towards the top to show player direction. This spins around as player character turns to remain accurate to how player is facing. The compass is a realistic iconic and metonymic representation of a real compass. On the outer ring, an arrow shows direction the player should be going in to reach the next mission objective.

The mission objective is also shown as a large flashing dot on the compass to further draw player's attention to it. The flashing mission objective dot indicates a goal point to the player, a point they must reach to accomplish the mission. Therefore, it could be seen as a metaphor for success at reaching the objective.

Fig 49. The combined radar, compass (points display around the outside ring of the radar) and enemy detection device. The bars on the left and right rise as the enemies are alerted to the player's presence. When the bar is at the top as in the picture the enemies are fully alert and actively seeking out the player.

Enemy NPCs display on the radar as small dots, which metaphorically represent the enemy NPC, but these only appear if the player has first tagged them by discovering their location using the binoculars. When the player is close to enemy NPCs, colour is used to denote their status with green showing the player is safe from detection. Orange shows risk of detection and red shows the enemy has detected the player. These colours are metaphoric representations of enemy NPC status, with brighter colours (orange then red) representing increased states of alertness in enemy NPCs.

In Super Monkey Ball, at the bottom right of the play area is a map displayed as a quarter slice of circle. On the map the player's location is shown as a monkey head, again showing synecdoche as the head represents the full character, bananas are shown as bananas showing an accurate metonymic representation and the goal line is also shown from an overhead view point showing a metonymic representation. The play area is displayed accurately in terms of its colour with play area boundaries clearly marked, however this is a synecdoche relationship as the entire play area will not always display in the map.

3.5.3 Timers

Next to the character drawing is timer icon that looks like an egg timer in Max Payne 2. This is initially filled grey, representing bullet time available. When player switches to bullet time, this decreases showing player is using bullet time. When not in use, bullet time timer will gradually replenish. The egg timer is communicating the abstract concept of time. Therefore, the egg timer is a metonymy of time as egg timers have clear timing connotations.

At the top of the screen, In Super Monkey Ball is a timer. This timer uses the metaphor of a bomb with the fuse burning down to express the urgency of the situation. The large blue cartoon styled bomb displays at the top centre with time left displayed inside it, in the centre and the text ‘time’ underneath it to emphasise purpose. The numbers, because of the context, are clearly a metonymic representation of the decreasing round time. The fuse extends out to the right and decreases as round time goes down. The fire at the end of the fuse spins round constantly to attract player’s attention and the fuse itself goes from yellow to red as time decreases. Here we can see further metonymy where the idea of red being danger is used and the fuse spinning is used as metaphor for the fuse burning down.

Fig 50. The timer is a highly reactive part of the HUD with the fuse constantly decreasing to match the time passing. "Hurry up" displays at ten seconds to warn the player. Time left even displays on the stage exit gate.

As game timer gets below ten seconds the bomb at the top centre cracks to alert the player, a metaphor of time running out, upon reaching zero seconds, the bomb explodes with a message saying time up displaying on screen. The player automatically restarts the level, if they had a life remaining again showing a metaphor of the player running out of time or a failure state (player loses a life).

In Crazy Taxi, timer displays at the top left of the screen in large coloured font. When the player is close to running out of time the game timer flashes and a ticking noise can be heard. The flashing of the timer and the associated ticking sound are a metaphor for alarm warning the player of the imminence of running out of time. Passengers too become anxious if the time is running out and will scold the player for poor driving i.e. crashing (Justice, 2000).

3.5.4 Weapons and Tools

Zelda benefits from an extremely intuitive control system where player can assign tools and objects in their inventory to three buttons with one main action button. A diagram displays on the interface with representation of button along with, for each button, representation of item or tool assigned to it. The diagram accurately represents the button layout and placement on a Nintendo Gamecube control pad and therefore, provides a good metonymy between buttons on screen and actual buttons on gamepad. This allows player to see, at a glance, exactly which button will activate which weapon or tool, the customisation allows the player to experiment until a comfortable set up is found.

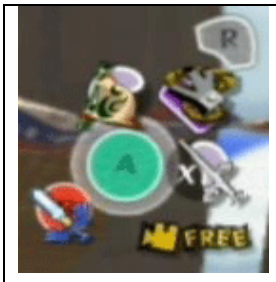


Fig 51. The joypad button displays with the weapon or tool the player has chosen superimposed on top of it. Although in a static screenshot this may look somewhat confused, during gameplay this system feels natural and instinctive after only a short time.

Weapon power ups use clear iconic imagery to display purpose. So arrows look like arrows, bombs like bombs etc. This is further use of clear metonymic representation, although it could be considered use of synecdoche too, as what appears on the ground as a single arrow could actually give the player ten arrows i.e. one standing for multiple, like a part standing for the whole. Power ups are often initially hidden, generally appearing when player defeats the enemy and when they use their sword to cut through small trees or fields of grass. Power ups display on the ground for a limited time after the player uncovers them, first flashing then disappearing altogether.

The player also has a special musical instrument known as wind waker, which resembles a conductor's baton. When the player is required to play this instrument, directions appear in centre of screen and the tune plays out. The player uses the wind waker to repeat the tune matching sequence and timing. The directions displayed on screen have a metonymic relationship with buttons featured on gamepad but also the idea of player conducting the music is a metaphoric representation of conducting music in the real world.

In Max Payne 2, a textual description of the selected weapon displays in the bottom right e.g. 9mm pistol with number of bullets in gun and total number of bullets for weapon. This information is clearly symbolic in nature. In addition, when cycling through weapons, or choosing a specific weapon using the weapon keys 1 to 6, the player can see an iconic representation of chosen weapon. The fire mode can be selected e.g. two pistols to represent dual guns. This mode of display contrasts with text only display used in the bottom right of the screen. However, this is necessary to make weapon options clear immediately. This may be difficult with textual descriptions, especially if player has many weapons.

In Far Cry, the player's inventory is limited and can only hold four weapons excluding throwing weapons such as grenades. If the player discovers a new weapon, text describing the weapon appears and how to pick it up. However, if player's inventory is full, they will be prompted to discard current weapon to collect the new one. This gameplay mechanism models a backpack to store weapons in and hence is a metaphor of a container device.

First aid power ups display in the game world as a white box with bright red cross on it. This clearly shows purpose of the power up and in doing so demonstrates metonymy and consistency with other games of this genre. Weapon power ups similarly demonstrate further metonymy; all weapons are detailed, realistic representations of actual weapons.

An important item is the binoculars obtained about mid way through the first level. These allow player to zoom in on any part of the game world. The powerful binoculars allow player to zoom from 2x to 24x. They not only allow player to see much further into the distance, they make sounds from the same distance range audible. An interesting feature, as the player can listen to any enemy conversation to pick up clues to their intentions.

However, the most useful function is the binoculars ability to tag enemies in the area the player moves their view over, causing the enemies to appear on the radar as small dots, allowing the player to track their movement and plan attacks. The binoculars general functionality is metonymic such as zooming in for a better view as is their appearance. However, the added features it supplies such as allowing distant sounds to be clearly heard and for enemies to be tagged on the map are clearly added unrealism demonstrating some use of metaphor too.

Fig 52. Binoculars are an essential tool in Far Cry as they allow the player to 'tag' enemies meaning their location is plotted on the radar permanently allowing the player to track enemy movement to plan avoidance or an attack.

In Far Cry, the player starts with a 9mm pistol but is not restricted to this weapon and can pick up a wide range of weapons including huge rocket launchers to blow up enemy helicopters. Weapons are occasionally found by exploration such as in enemy buildings and often dropped by enemies when they are overcome.

Fig 53. On some occasions the player is required to deal with air based targets too. Helicopters, though tough, do have weak spots the player must exploit to avoid being killed.

Weapons are realistically modelled on the real weapons they represent and have a metonymic relationship with the actual weapon. The player characters arm, hand and the weapon constantly displays on screen as is convention in the genre. The hand represents a synecdoche as it is part of player character, whilst gun represents metonymy as it is an accurate iconic representation.

	Fig 54. Statistics for the player's selected weapon. The top number is bullets loaded, bottom, total available. Right is a count of flash grenades (0).

To the right of the player's health bars, the weapon details display on a small panel. At the top, the number of bullets in the player's gun displays and below, the overall amount of ammunition player has for that weapon. To the right, a small stone or grenade icon with a number in it displays depending on whether player has the grenade attack weapon selected or stone distraction object. Grenades are strictly limited and hard to find hence the number inside denoting amount of grenades.

Rocks can be easily found in many locations thus the player has (near) infinite supply. Grenade and rock icons are fairly clear and a metonymic connection can be assumed. However, flash grenades simply display as a box icon which offers little description of their actual purpose. This makes the connection here a tentative metaphor link.

3.5.5 Profile / Game Data Tropes

The interface includes messages to communicate game status to player e.g. saving, the user position or if user fails and has to reload or quit game. To do this Fahrenheit uses a VCR based metaphor with a red record circle used for saving, the square stop button to stop playing or quit and rewind button to reload last save. These controls are familiar to any games players and communicate their function well.

In Final Fantasy X, a save point is denoted by spinning mystical blue sphere. Whilst this may not be consistent with the real world, in the game area spheres are generally considered a type of storage medium. In key parts of the game, the player discovers spheres which play back some important part of the main character's past. This might be likened to how holographic video plays back in science fiction movies such as Star Wars. Therefore, the sphere could be seen as a metaphor for storage device such as hard disk.

After running out of time in Crazy Taxi, the game assigns a score and rank based on number of passengers taken to destination and cash earned. Scores are ranked in the high score table along with grade earned. This arcade heritage means score attack is a large part of long term gameplay. The rank and score system shows another facet of the reward system. A large incentive is replaying to try to attain the next rank.

The ranking system is familiar, it is metonymy of the traditional school and college grading systems with E-A grades but also employs an extra special S grade (above A) for exceptional performance.

In the Super Monkey Ball end game credits bonus level, hitting a letter results in the player character losing some of their collected bananas making the letters objects of fear and a metaphor for danger as hitting them has negative consequences. At the end, the player is given a ranking according to how many bananas were collected. This ranking is a metaphoric representation of player's performance as the titles given are quite ambiguous and does not clearly reflect the player's performance in the same way number of bananas a player obtains does.

The player is free to end this section at any time by pressing the main selection button (A) on the joypad. Even the name entry system manages to maintain the games unique mechanics. Here player must spell out their initials by rolling the monkey ball to the correct letters and pushing them in. This demonstrates an example of metonymy usage in the game mechanics, name entry system mimics main game in control and functionality.

Fig 55. For completing a game the player is allowed to record their high score and, on completing beginner, advanced or expert difficulties gets to watch the credits whilst participating in a mini game. This rich tapestry of rewards is certainly a big part of the games charm.

In Super Mario Sunshine, after the main menu the player has to select where to save their game data. For the options menu the classic Mario 2D platform game style is used where Mario is controlled by the player and must jump-bash one of three lettered boxes; A, B or C which each represent a unique save profile.

Fig 56. A unique slant on setting up a game save profile. Mario is controlled by the player and must bash the save box desired by jumping up at it.

3.6 Interface Tropes

Final Fantasy X features a unique way to develop the character using what is called ‘sphere grid’. The sphere grid is a map like structure with hundreds of points. Each character follows a unique path with each point offering a new way to develop the character, such as, adding to strength, agility, defence, magic defence or teaching new ability. The innovation is the player chooses the path each character takes through the sphere grid even allowing characters to meet and cross paths, so multiple characters learn the same abilities. The limitations imposed are amount of move points the player has and how many power, defence, magic and ability spheres are available.

Fig 57. Sphere Grid. Each point relates to a different type of ability. Colour and icon are used to differentiate between abilities.

The sphere grid looks like a map, and shares some concepts such as being able to traverse it. In some ways it resembles a board game too; player has limited ‘moves’ and moves only point to point. However, some possibilities are more abstract such as ability to spend spheres to improve character attributes. The sphere grid uses metaphor of the map to represent the concept of character development and improvement (Kasavin, pg 2, 2001).

Max Payne 2 introduced new methods of telling the story and new styles of presentation, namely the dark comic book art style, used for inter-level cut scenes.

Fig 58. Example of the clever noir themed comic book style interludes that further game story between levels. The small square at the bottom pops out a range of VCR style controls allow the player to spool forward or backwards through these scenes (Kasavin, pg 1, 2003).

The mini interface displayed, whilst viewing the cut scenes between levels is also worthy of discussion. A neat interface, initially tucked away. It is activated by clicking a button in centre of the screen just below actual cut scenes. This brings up a control panel reminiscent of DVD or VCR playback controls including controls to rewind, fast forward, skip backwards, forwards, pause and exit (power button). This is another example of the VCR control metaphor, similar to that observed in Fahrenheit.

The popularity of this interface metaphor is understandable; many have experience using a VCR or DVD player, therefore, many people will recognise this.

Fig 59. Even from Super Monkey Ball's title screen one can see effective use of strong, bold colours. Throughout, the game (and interface) is bright and colourful. This charm aids appeal to younger gamers whilst, later levels particularly offer sufficient challenge for any game player.

The format of the options screen is top banner displays what area of the options screen player is currently looking at e.g. party game. This is similar in appearance to a notice board or banner and represents this through the metonym trope. The middle part shows wooden style circular discs each one displaying in text the name of the option it represents.

Throughout the options the circular disc represents an individual choice and so could be seen as a metaphor for a specific option. At the bottom of the screen on a rectangular panel a textual description of selected mode displays. The bright, bold colours and styling are metaphors for fun and visually stir connotations of fun events such as a day out at the beach in the summertime. The style adopted throughout is of a classical wooden finish with a simple wood grain effect on the options windows. This represents metonymy with classic wooden notice boards.

When a menu item is selected it blinks rapidly and zooms in to the centre of the screen, highlighting player's choice. This is known as a selection metaphor and similar effects are commonly used in video games to draw the player's attention. The currently highlighted option blinks steadily and displays larger than other menu items. This is intended to draw attention to it and highlight its (important) status as chosen option.

To the right of the bottom description panel is a listing of buttons and what each does. In some game modes, a player can select to play or first view a lesson. The button icon displays first then a single word describes its function e.g. lesson, select or cancel. The button icon provides an iconic likeness of actual joypad button emphasised by accurate colouring showing a metonymic link.

Fig 60. Gameplay mode selection for the main game. Competition mode is for multiple players to compete on a particular stage for highest score. Practice mode is useful for stages a player is struggling on as it allows a single stage to be practised without the normal completion criteria e.g. timer (Torres, 2001).

The player select screen simply provides four circular icons for the number of players going from one up to four. In the character select screen in the centre each character displays framed in a circle of colourful flowers with their name below in bright orange to yellow text. The characters animate to show actions such as them shaking their heads or tapping their feet. The characters here accurately represent characters the player controls in the game and therefore are metonymic representations.

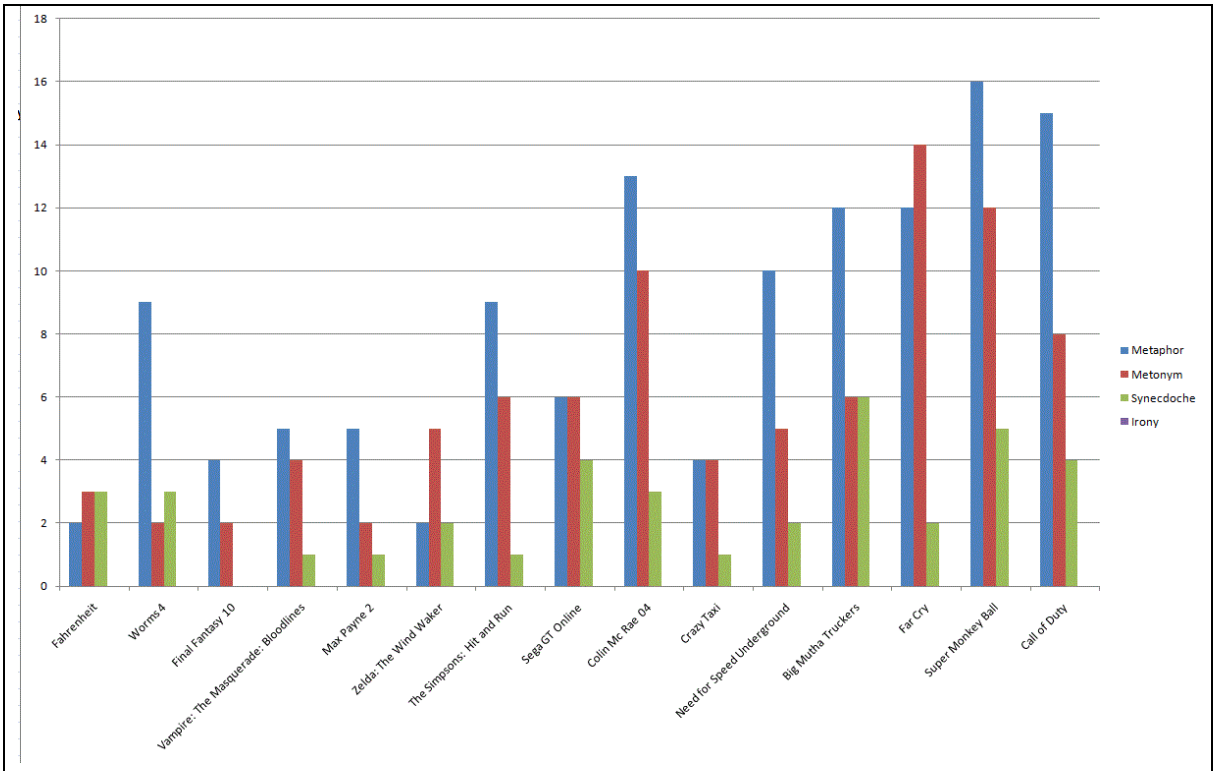
The selected character stands up to show their joy at being chosen; a little reward for the player before they have even begun the game. To show selected character, a flashing icon with 1P on it displays below selected character to show the position of player's cursor. This is a metaphoric representation of the player who, of course, cannot be accurately represented in the game.

Fig 61. The character select screen. Cleverly characters animate here, reacting to the player's selection.

After this the player selects difficulty level. This defines the difficulty of stages and how many stages the player will be expected to play through. On the large circular coins at the top is the text to describe the selected mode e.g. beginner, advanced and expert. In the large white centre two letters from the beginning of the word are used to signify the mode e.g. BE = beginner, AD = advanced and EX = expert. At the bottom of the coin is the number of stages the player will be expected to complete e.g. 10, 30 or 50. The coins use symbols to represent difficulty level and length of game player can expect and therefore provide a metaphoric representation of difficulty.

3.7 Evaluation of Videogame Trope Presence

Below, an overall summary of the results from this experiment can be seen. Further detail is given in the following sections with a full explanation of the key data and results. For a complete listing of all results obtained please see appendix A.



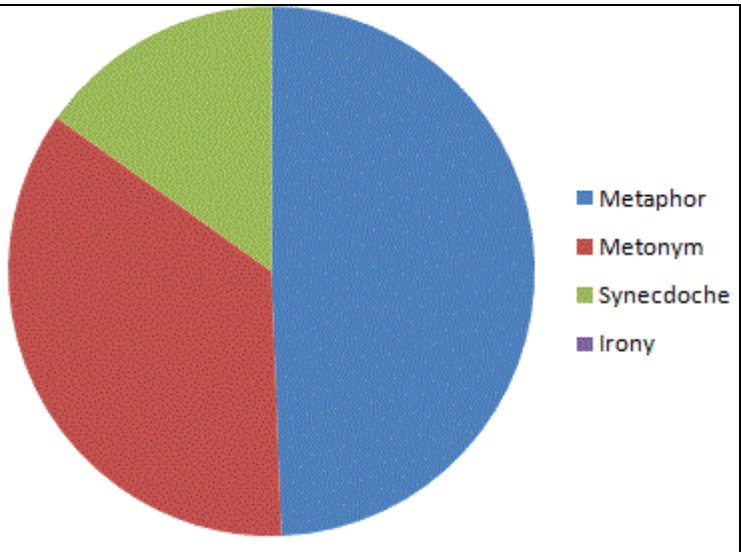


Fig 62. (above) A bar chart showing trope prevalence by game. Fig 63 (left). A pie chart showing overall trope concentration taken as a total over all games tested. Note the lack of irony in all results. This is not a mistake, the study failed to identify any instances of videogame irony at all.

The study was a success on a number of levels. Firstly, the insight it gave to the author in terms of how games communicate with the player and help the player to form intentions and develop and carry out their objectives to successfully tackle the game challenges.

Secondarily, this study has gone a considerable way towards achieving the original objective specified, that is, to discover use of the tropes metaphor, metonymy, synecdoche and irony. Although on the surface their usage in the chosen games may not be initially clear and even after this detailed study there will undoubtedly be further tropes yet to be discovered in the chosen games. Despite this significant use of tropes has been discovered in every game investigated showing that, from the sample at least tropes do form an important part of modern video games.

3.7.1 Observations

Metaphor was the most commonly used trope, showing parallels with its prevalence in user interfaces as an understanding facilitator, providing a real-world grounding or anchor point (Marcus, 1998). Metonym was also common though in the majority of games it was only about half as common as the metaphor. However, in two instances (Far Cry and Zelda: The Wind Waker) metonym usage eclipsed metaphor usage slightly and in Crazy Taxi, metaphor and metonym usage was equal. Synecdoche usage was rare although it did have some level of presence in all games except Final Fantasy X. Interestingly, some games (Fahrenheit and Big Mutha Truckers (Eutechnyx, 2002)) had synecdoche presence equal to metonymy and Worms 4 (Team 17, 2005) even had a slightly higher synecdoche presence than metonymy.

Trope Usage by Game					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Fahrenheit	2	3	3	0	8
Worms 4	9	2	3	0	14
Final Fantasy 10	4	2	0	0	6
Vampire: The Masquerade: Bloodlines	5	4	1	0	10
Max Payne 2	5	2	1	0	8
Zelda: The Wind Waker	2	5	2	0	9
The Simpsons: Hit and Run	9	6	1	0	16
Sega GT Online	6	6	4	0	16
Colin Mc Rae 04	13	10	3	0	26
Crazy Taxi	4	4	1	0	9
Need for Speed Underground	10	5	2	0	17
Big Mutha Truckers	12	6	6	0	24
Far Cry	12	14	2	0	28
Super Monkey Ball	16	12	5	0	33
Call of Duty	15	8	4	0	27
Total	124	89	38	0	251
Average	8	6	3	0	17
Percent	49	35	15	0	100

Fig 64. Overall summary of trope usage across games investigated. The numbers refer to unique trope usage incidents within that game. A trend can be observed where the metaphor holds highest prevalence or usage level, with this level decreasing through metonymy and synecdoche, finally reduced to zero for irony.

A lack of irony in all games investigated was noted. However, it may be that irony simply does not exist within the game aspects considered, which focused primarily on gameplay and elements which support it, such as the HUD, character and game environment, as the results below demonstrate. The study focused less on narrative devices such as cut-scenes and video sequences. Hence, it may be that irony holds prevalence within cut-scenes or another aspect outside the boundaries of the study.

	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	6	4	1	1	12	50.00
Metonym	5	1	0	0	6	25.00
Synecdoche	6	0	0	0	6	25.00
Irony	0	0	0	0	0	0.00
Total	17	5	1	1	24	
Far Cry						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	0	9	0	3	12	42.86
Metonym	0	7	2	5	14	50.00
Synecdoche	0	0	2	0	2	7.14
Irony	0	0	0	0	0	0.00
Total	0	16	4	8	28	
Super Monkey Ball						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	5	5	3	3	16	48.48
Metonym	4	3	3	2	12	36.36
Synecdoche	0	3	0	2	5	15.15
Irony	0	0	0	0	0	0.00
Total	9	11	6	7	33	
Call of Duty						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	1	8	3	3	15	55.56
Metonym	0	3	1	4	8	29.63
Synecdoche	1	0	0	3	4	14.81
Irony	0	0	0	0	0	0.00
Total	2	11	4	10	27	
Average	0.98	1.75	0.42	1.00	4.15	
Grand Total	59	105	25	60	249	
Percent	24	42	10	24	100	

Fig 65. Finally the trope usage for each game was broken down to show where within the game the trope was discovered. This enables one to appreciate the distribution of trope usage through the games studied. Each of the four tropes was investigated within game interface, HUD, characters and environment.

This confirms existing understanding of irony i.e. it is a trope that occurs traditionally within conversion. Chandler (2002) defines it as “an ironic expression or utterance", hence, irony is a subtle trope, which is only revealed under certain circumstances e.g. during a conversation. Irony is quite an intimate mode of communication, requiring (unspoken) understanding and acknowledgement of the irony from both parties, perhaps another reason it is not seen in games. Furthermore, it can be used in different ways and to different extents across different locations and cultures. Indeed, the English are regular users of irony in comedy and normal conversation. Irony can be used to great effect, especially in terms of comedic performance. However, it can also completely bewildering if it is mistaken for truth by someone not realising the irony of the intonation e.g. when used in a normal, everyday conversation (Fox, pg 65, 2005).

As, mainstream games particularly, like those investigated, are released across the world, care must be taken to ensure all audiences can interpret visuals, text and audio in a meaningful way. Hence, the, quite strong, level of irony one territory e.g. the English are accustomed to may be less appropriate within other territories.

3.7.2 Emergent Trends

The general results, which have emerged is that metaphor usage is higher than metonymy and metonym use is greater than synecdoche. Lastly Irony could not be detected. Whilst this trend was reinforced by most games tested, there remained considerable variance between each game meaning there is no guarantee that another sample of games would necessarily reinforce these results or even follow the same pattern. A far larger sample (in the hundreds) would be needed to reliably predict trope concentration for a specific game or type of game. Unfortunately, data gathering of such a scale proved beyond the remit and means of the research. Nevertheless, through the detailed study of a relatively small body of games some valuable insights have been gained. These insights will be explained in the following sections.

Results gathered were analysed carefully and a great effort was made to establish connections between trope usage patterns and the specific game or type of game tested. Initially, it was believed that a game (or set of) might have a particular trope usage pattern or profile.

To reveal these patterns a wide range of data about the sample games was collected, which included some quite basic data one might see in a professional games review, such as, publisher, developer, release date and number of players (these can be seen in the full result set in Appendix A). Whilst no obvious correlations emerged with those data sets, the investigation proceeded to consider the relationship between game genre and trope usage. To this end the results table shown below was prepared.

Trope Usage by Genre					
Driving and Racing games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Sega GT Online	6	6	4	0	16
Colin Mc Rae 04	13	10	3	0	26
Crazy Taxi	4	4	1	0	9
Need for Speed Underground	10	5	2	0	17
Big Mutha Truckers	12	6	6	0	24
Genre Total	45	31	16	0	92
Adventure Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Fahrenheit	2	3	3	0	8
The Simpsons: Hit and Run	9	6	1	0	16
Genre Total	11	9	4	0	24
Role Playing Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Final Fantasy 10	4	2	0	0	6
Vampire: The Masquerade: Bloodlines	5	4	1	0	10
Zelda: The Wind Waker	2	5	2	0	9
Genre Total	11	11	3	0	25
Action Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Worms 4	9	2	3	0	14
Max Payne 2	5	2	1	0	8
Super Monkey Ball	16	12	5	0	33
Genre Total	30	16	9	0	55
First Person Shooting (FPS) Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Far Cry	12	14	2	0	28
Call of Duty	15	8	4	0	27
Genre Total	27	22	6	0	55
Grand Total	124	89	38	0	251
Percent	49	35	15	0	100

Fig 66. The summary above is similar to the overall summary chart but also shows trope usage by genre, allowing genre trope usage totals to be calculated and hence trends of usage determined for each genre.

In the results (Figure 66), the driving genre presents the clearest separation of data with an almost direct decrement of 15 instances between metaphor usage (at 45) metonym use (at 31) and synecdoche use (at 16). For clarity one could state metonym use is two thirds metaphor use whilst synecdoche use is equivalent to only one third of the metaphor use. The action genre mimicked the driving genre in terms of its trope usage with almost identical distribution where metonym (16) was two thirds of metaphor level (30) and synecdoche use one third (9). This similarity could be attributed to the similarity between content in driving and action games and their emphasis on player reactions and dexterity.

In adventure games, only two points separate metaphor and metonym (11 versus 9) whilst synecdoche use is less than half that of metonym. Meanwhile role playing games present the largest deviation with metaphor and metonym usage both being equal at 11 whilst synecdoche use is just over a quarter of this at 3. The FPS genre probably came closest to the adventure genre with a relatively small separation between metaphor and metonym use (5) but a much larger gap between metonym and synecdoche use (16).

To summarise, matching patterns of trope usage were emerging between the driving and action genres where trope usage fell by a third from metaphor to metonym and a further third moving from metonym to synecdoche. Role playing games and adventure games had a similar relationship but different patterns of trope usage where metaphor and metonym usage are close but synecdoche usage is far less.

Next the relationship between game quality and trope usage is considered. The results below present twelve different reviews for each game. By averaging these scores an attempt can be made to gauge the overall quality of each game, according to the chosen sample of journalist and user reviews available at the time.

Title	Rating													
	Gamespy	IGN	IGN: Reader	IGN: Press	Gamespot	Gamezone	GZ Web	Edge	CVG/Ass	Gamepro	GP: User	Gaming Target	Total Reviews	Average %
Fahrenheit	70.00	83.00	89.00	84.00	84.00	93.00	85.00	80.00	90.00	N/A	N/A	85.00	10	84.30
Worms 4	70.00	75.00	83.00	71.00	62.00	N/A	85.00	N/A	80.00	N/A	N/A	N/A	7	75.14
Final Fantasy 10	80.00	95.00	92.00	94.00	93.00	95.00	91.00	60.00	N/A	100.00	92.00	100.00	11	90.18
Vampire: The Masquerade: Bloodlines	80.00	84.00	86.00	80.00	77.00	90.00	79.00	60.00	86.00	80.00	N/A	N/A	10	80.20
Max Payne 2	100.00	94.00	92.00	86.00	90.00	96.00	89.00	60.00	93.00	90.00	74.00	84.00	12	87.33
Zelda: The Wind Waker	100.00	96.00	94.00	96.00	93.00	99.00	97.00	90.00	100.00	100.00	92.00	100.00	12	96.42
The Simpsons: Hit and Run	90.00	81.00	80.00	80.00	83.00	86.00	82.00	N/A	73.00	N/A	N/A	74.00	9	81.00
Sega GT Online	60.00	70.00	79.00	70.00	61.00	70.00	68.00	N/A	N/A	80.00	N/A	50.00	9	67.56
Colin Mc Rae 04	N/A	N/A	N/A	N/A	88.00	N/A	89.00	N/A	90.00	N/A	N/A	N/A	3	89.00
Crazy Taxi	80.00	96.00	87.00	91.00	87.00	N/A	50.00	70.00	90.00	100.00	82.00	93.00	11	84.18
Need for Speed Underground	80.00	90.00	87.00	88.00	80.00	81.00	83.00	70.00	84.00	100.00	94.00	81.00	12	84.83
Big Mutha Truckers	40.00	63.00	60.00	55.00	62.00	65.00	56.00	60.00	N/A	N/A	50.00	36.00	10	54.70
Far Cry	90.00	92.00	90.00	88.00	92.00	96.00	90.00	80.00	93.00	80.00	100.00	N/A	11	90.09
Super Monkey Ball	80.00	83.00	85.00	83.00	88.00	N/A	N/A	90.00	N/A	90.00	76.00	88.00	9	84.78
Call of Duty	100.00	93.00	92.00	92.00	90.00	94.00	92.00	70.00	93.00	100.00	100.00	N/A	11	92.36
Average	75	80	80	77	82	64	76	53	65	61	51	53		

Fig 67. Listing of games tested with review scores from a total of twelve videogame review sites; ten are by professional videogame journalists, whilst two (IGN: Reader and GP: User) are user reviews. An average is also presented for each game. This enables one to compare game quality with review score enabling one to determine the relationship between game quality and trope concentration and make up. Unfortunately, a number of games were not reviewed by all sites making completely fair comparisons difficult.

As figure 67 demonstrates, most games can be considered to be of high quality (75% and above) whilst a couple of games are of average or mediocre quality (50% to 75%). Unfortunately, it was not possible to establish a direct parallel between the quality of a game and the number of tropes it uses. That is not to say that no correlation exists, simply that a correlation could not be established with the set of games tested. A larger sample body with a broader range of game quality may enable some clearer results to emerge. However, it was not considered practical to proceed in this direction. Indeed, the subjective and elusive nature of terms like quality and ‘good’ or ‘bad’ do not fit well with the rigour and precision of a scientific investigation.

In terms of interface, some similarities can be drawn between the games studied. In 3D games, which provide the player with a substantial environment they can freely explore, navigation is very important. To aid the player, special 'props' such as small maps or radars that constantly display via the on-screen HUD are commonly used. In a general sense these ‘mini maps’ could be seen as approximations of the whole environment. Therefore, they could be considered to be synecdoche’s of the entire play area in that they cannot possibly display the full extent of the environment in full detail yet they display accurately the area around the player with key gameplay features highlighted.

A feature from the very start of gaming, the score display, is still as prevalent as ever simply in differing forms. Classic games may simply display a score meter and give a set number of points for certain actions.

Modern games are now much more exploration and collection orientated, where players collect valuable objects such as coins, which are displayed on a counter and act as currency, allowing the player to purchase in game items. These collectables can also be likened to another form of score, rewarding the player for their actions. Indeed, in the example of The Simpson's Hit and Run, one can see another example of how score is kept in terms of the percentage of the game the player has completed.

Some of the most common tropes found are linking of player energy bar to the physical state, health and well being of the player and representing decreasing time with contracting bars, sometimes in novel forms e.g. the fuse of an explosive. In addition, through a number of games the idea of using metaphors to represent concepts that do not take a physical form can be seen. In particular, this can be seen in the representation of time in Worms 4, Fahrenheit and Max Payne 2. Similarly in these and many other games the use of metaphor can be again seen in representing the player's health and status.

Some games even map game pad and/or mouse buttons to the on screen interface. For general usability and quick learning this is to be commended. Two games investigated in this study that do particularly well in this area are Vampire: The Masquerade: Bloodlines (Troika, 2004), in the way the positioning of the on-screen elements are synchronised with the positioning of the left and right mouse buttons, and Zelda: The Wind Waker for providing on screen representation of game pad buttons with simple yet effective icons to show what the player assigned to that button.

Likewise, other games make effort to minimise the scale of the interface and hence, information a player has to take in at once by only displaying information directly relevant to the player at that time. This can be seen in Fahrenheit where the coloured action keys only display when in an action sequence and the players mood bar only displays when some change to it has taken place. In Worms 4 energy bars and message panels only display when there is important information to communicate to the player.

Other common ideas are making key objects immediately obvious and visible to the player to denote their importance in the game environment. This can be seen even more clearly than normal in cartoon styled games such as Worms 4 in terms of the large bouncing item, tool and health crates and in The Simpson's: Hit and Run in terms of large rotating, shiny golden coins and colourful bonus cards.

An emergent, growing area identified in Fahrenheit where this technique is used in action sequences and in Final Fantasy X, where it is used for characters special overdrive moves are Quick Time Event (QTE) sequences. These sequences generally require the player to quickly hit a simple button combination or simply hit two buttons as fast as possible Fencott et al [2] (2010).

This idea has in the past been used in a different context, in Olympic Games titles such as the Track and Field (from 1996 by Sony) series of games on the Sony Playstation. This idea is to be encouraged as it helps the player to experience the physical exertions of the player character albeit in a much smaller way, a synecdoche of the simulated character's exertions. The subsequent introduction of motion based control means action sequences now can let the player actually perform the actions as they are in the game environment.

4. Widening the Definition of the Trope

4.1 Critical Appraisal of Tropes in Games Experiment

It was undoubtedly useful to investigate videogames for their use of tropes and some useful, valuable data was gathered and some general trends identified. Indeed, this study has provided significant enlightenment into the inner workings and game mechanics of a number of recent and earlier video games described through their trope usage patterns, a novel idea. However, as an early and quite short experiment, there was insufficient insight into the relationship between tropes and videogames to add significantly to the body of knowledge in this area.

Tropes identified are taken from a relatively short play session on each game (approximately three to four hours per game) although they also draw upon experience the author has gained from playing these games more extensively in the past. Playing deeper into the game, whilst continuing to analyse trope usage, could reveal further usage of tropes possibly for differing needs e.g. as the player gets further towards the end of the game, it inevitably becomes much harder to proceed, hence the player needs greater rewards for progression at the game. Indeed, as Davidson (2003) discusses, the player's state of mind changes considerably moving through the three states of Initial Involvement, Immersion and Investment as they progress through the game. In the end, gameplay becomes a significant time based investment where the player must complete the game to get optimal fulfilment. Therefore, analysing longer play sessions and taking results at different stages of Davidson's cycle could be a useful extension of this study.

Scenery and the game environment were investigated in the study although due to time and resource limitations this was restricted to objects of direct importance to the player such as collectables and objects the player must interact with to further the gameplay. However, other objects which are not directly related to the core game play can still be useful layout signs and can still communicate useful information to the player e.g. the navigational functions of Fencott’s (2003) sureties. These objects could also demonstrate additional usage of tropes.

Of course, the clearest result, reinforced through all games of the study was a complete lack of irony in any of the sixteen games tested. This is not considered a final or definitive result, more a possible side effect of the decisions made when setting up the experiment and the boundaries for how data would be gathered. An experiment which considers cut scene and video-based interludes as an important part of the game experience would likely discover some degree of irony in at least some of the games tested.

4.2 Theoretical Discussion

One of the hardest parts of the experiment was drawing the line in terms of deciding what constitutes a unique trope instance. Part of the difficulty was in getting the correct granularity of data to collect. For example, would interface and option screens be considered, intermissions and cut-scenes etc? It was decided that only aspects which were part of normal gameplay were to be considered and cut scene and option screens would generally be excluded.

Even within the selected elements however, further difficulties arose in terms of available time and resources to conduct the experiment. Considering the size, even of the small body of games selected, testing each chronologically from their start to end was unrealistic. Therefore, selective sampling was used in an attempt to capture moments of normal or typical gameplay for that particular title. In addition to these technical ambiguities, when completing this experiment, an interesting theoretical question emerged. This was:

> *Are all videogame components represented by tropes as it is not possible for any game to represent reality directly?*

As the literary review has established all mediums are coloured somewhat by their users, and videogames are no different. The creators of videogames have a clear impact i.e. videogame developers. Furthermore, all mediums have technical limitations on their expressive ability. For example, purely textual mediums have no visual component and rely entirely on the image formed in the mind of the reader through signification. Therefore, they rely upon the reader being able to read and interpret the symbolic text correctly and having experience or understanding of the concepts discussed in the text i.e. an advanced level quantum physics text would be meaningless to someone inexperienced in the field.

In terms of videogames very advanced visual and auditory representations are possible but most control schemes, especially in terms of tactile feedback are still very basic compared to the fidelity of the visuals e.g. there is no simulated sense of touch or smell, you can see the roses but not touch or smell them.

There is a point of view that states everything in a videogame is therefore tropical as it cannot match reality directly due to mediation. This point of view does have merit and does fit within what has already been learned about tropes, that is, their ability to communicate unfamiliar concepts through the use of familiar (looking) components e.g. the waste paper basket on the desktop (Marcus, 1998). Furthermore, it is not unusual for a medium to make use of tropes to facilitate its representations of reality both literature and film also do this.

Videogames, much like literature and film are, at their most abstracted level, nothing more than a composition of signs arranged to give meaningful significations to their users i.e. the game players. It is undeniable many of these signs will be tropes. Indeed, as the experiment proved, videogame content has many tropes. Furthermore, there will be many instances of metonym and synecdoche usage as the nature of videogame interfaces means that part for whole and whole for part representations are particularly common in this medium such as a characters head standing for the whole character.

However, whilst linked, signs do not necessarily all equal tropes. Karl Popper introduced the concept of verisimilitude stating that although absolute truth cannot be proved for any scientific theory, varying degrees of falseness are possible making it possible to determine the truth of one statement relative to another one. In essence it refers to a semblance or element of identifiable truth. Such theories were adopted in literature; in particular, at the time poetry was particularly popular. The theory was used to instil a grounding of reality within the fictional works in order to supply a believable scenario for the reader to become engaged with (verisimilitude definition, 2011).

One might consider the evolution of videogames increasing sophistication and more realistic systems such as AI behaviour, environmental features etc as a series of ever more elaborate falsehoods like those of science. However, whilst only seeming true on the outside, each one nevertheless still represents a progression, a semblance of truth within the falseness the limitations of the medium (and player aiding unrealisms) impose.

4.3 The Need for A new Experiment

Whilst there were clearly several potential options for improving the existing experiment, it was not believed this experiment could, in any configuration, be sufficient to achieve the goals of the research or offer sufficient contribution to knowledge by itself. Therefore, the original goals of the research were reinvestigated towards laying the groundwork for a new experiment. These can be split broadly into two branches:

- Investigate possible relationships between tropes and videogames, specifically trope presence within videogames and what this can reveal about the nature of the game.
- From the resulting data build a model of videogames in which tropes facilitate the effective categorisation of videogame contents.

It was intended completion of these goals would also enable a wider definition of the trope to be achieved. This might be a collection of videogame-specific tropes which are valid within the domain of videogames, thus broadening the usage and application of tropes.

Much like the primary goals, there are two major definitions of the trope which this research aimed to investigate. The rhetorical or linguistic definition of the trope describes the kind of tropes which were applied to videogames in the first experiment and can be understood as follows:

“a word or phrase that is used in a way that is different from its usual meaning in order to create a particular mental image or effect." (Oxford [1], 2010) or more specifically: “Rhetorical ‘figures of speech’ such as metaphor, metonymy, synecdoche and irony.” (Chandler, 2006)

The four tropes Chandler refers to above were the same ones used in the experiment. Although valid argument for further investigations in this area certainly exists, as possible future work, the fact remains, an experiment had been conducted, results logged and findings discussed. Therefore, it was decided for the purposes of this research, at least, the investigation into rhetorical tropes ceased and a new investigation was planned.

This new investigation used the literary definition of the trope as its starting point, which is as follows:

“A trope is a common pattern, theme or motif in literature. A well understood and well used idea or concept also known as cliché. The 'misunderstood monster' is a common trope; Frankenstein is the seminal story using this trope; which has formed the basis for numerous other literary and cinematic works. Literary tropes may refer to the characters (e.g. the noble savage), plot (the clever prison break) or setting (the haunted castle)” (Webster [1], 2010)

This definition was simplified to consider a literary trope as a shared concept or aspect in a particular domain. As a basis for this new experiment, which comprises the remainder of the thesis this simplified definition of a literary trope was applied to videogames.

Just as the rhetorical definition of the trope correlates with the first aim of the research i.e. providing new information on videogames, the literary definition is taken with the intention to further this aim but to also move towards a new means of videogame categorisation (the second aim) in terms of shared aspect or common form usage.

Therefore the literary definition of the trope actually provided the criteria for the identification of new videogame-tropes. Of course, means of testing and verifying such tropes was required. However, with the appropriate academic rigour applied, any identified literary tropes within games hold the potential to broaden the definition of the trope, at the very least when referring to videogames.

Lessons were learnt from the previous experiment, a much wider and more diverse body of videogames were used as the source to ensure the scale of the experiment would not compromise the quality or integrity of results received.

4.4 Order of Events

Discussion of the second, literary trope experiment comprises the majority of the remaining chapters. Chapter eight (unabridged chapter available on the CD-ROM) recounts the earliest part of the experiment; a number of games were investigated to determine their shared aspects. Initially, each game was taken as a unique source and possible 'candidate' shared aspects or common forms were collected. These candidates were compared between other games of the same type (genre) to eliminate forms which held little similarity between different games.

Chapter nine explains how the body of common forms discovered were reduced via a process of relationship modelling with abstraction applied. Meanwhile chapter seven recounts the common forms discovered summarising them to a simple listing with simplified at-a-glance definitions.

Chapter five and six offer in-depth explanation and analysis into eight of the most significant common forms using a range of examples from modern videogames with which the common forms are fully justified with their usage explained within a number of different videogames spanning different genres, formats and time periods. For those wishing to learn more, the CD-ROM contains a complete in depth discussion of all twenty-six common forms identified.

5. Player Status Common Forms

This chapter discusses a selection of four common forms related to player status. That is the resources the game affords the player, with which, to overcome the games challenges e.g. completing levels, finding treasure, defeating monsters etc. The common forms which are discussed in this chapter are:

- Status and Energy Depiction
- Non Player Characters
- Items
- Level Selection

Each common form will be discussed in its own section of the chapter with a separate evaluation of each common form at the close of its section and a table that evaluates the presence of the common form over the ten mainstream genres chosen for investigation.

5.1.1 Methodology

Games were chosen to ensure each of the ten mainstream genres is adequately represented within the study. Therefore, one of the main criteria was that a balancing should be achieved between these ten genres so each genre was adequately represented at each stage of the study with sufficient example games (e.g. each genre should have at least ten example games) to argue the case for or against the inclusion of the common form under investigation. Although, the balancing was not sustained to the level given in the example, a continued effort was made to ensure that each genre was represented to the same extent as the others, even where there were slight variations in the number of example games each genre had. To recap, the genres investigated for common form investigation are:

- First Person Shooter (abbreviated to FPS)
- Driving
- Adventure
- Platform
- Real Time Strategy (abbreviated to RTS)

- Simulation
- Role Playing Game (abbreviated to RPG)
- Puzzle
- Sports
- Fighting

The selection of these genres is fully justified in chapter one (section 1.6). As described in chapter one, aspects of grounded theory informed this part of the study with each of the selected games initially considered in isolation with all potential common forms noted down. It was only through further study with other games that these common forms gained strength, though presence across other gaming genres

When scoring each common form at the end of the section, scores shown for each genre are purely qualitative and based entirely on the sample of games investigated in that genre and how effectively they demonstrated the common form in use. The scores given are indicative as opposed to absolute and express opinion of the researcher based on the investigation and qualitative data gathered rather than numerical count or averaging. The scores give an approximation to the presence of the form based on the body of games chosen.

The purpose they serve is to provide an at-a-glance indication of the strength or prevalence the common form holds within a specific genre. Within the thesis these tables can be seen as a reader's aid in that they allow a busy reader to digest the information quickly and provide a short list of example games which demonstrate the presence (or lack of) the common form holds. This is also intended to provide a degree of traceability and repeatability in that readers could investigate the example games against this investigation and arrive at similar results for the common forms level of prevalence.

Furthermore, the following two chapters (which explain the core of the investigation) are also packed with screenshots showing games investigated with the text connecting the investigated games and discussing their common form usage. Other interested researchers can select their own sample of games based on the ones used within the thesis and should be able to arrive at similar conclusions with regards to the common forms investigated.

Therefore, independent investigation of the sample games used should broadly reinforce the findings of this study, although at the same time some consideration must be given to natural bias and differing investigation techniques between researchers so a direct like-for-like recreation could most likely not be achieved owing to the qualitative, as opposed to quantitative nature of this study and its reliance on prior experience of the games used.

As established in the introductory chapter (1.6) audio (and the related aspects of vocals, sound effects and music) are not considered within this study.

5.1.2 Background

The previous chapter discussed the work of the first major study in this PhD, in which, a selection of sixteen modern videogames were investigated for the presence of major rhetorical tropes:

- Metaphor
- Metonym
- Synecdoche
- Irony

Whilst the study was perhaps not of a sufficient scale to give truly conclusive results, some interesting trends did emerge regarding the balance of trope usage in current videogames. For a complete discussion please see 3.7 Evaluation of Videogame Trope Presence, however, in summary, metaphors were by far the most common trope identified with metonym usage about half that of metaphor and synecdoche usage even rarer. Lastly irony could not be detected at all in any of the sample games.

The reason irony could not be detected is believed to be related to its status as a verbal trope and its close association with humour. As discussion in videogames is typically limited to cut scenes, rather than core gameplay, it is believed this is why it could not be detected.

5.2 Goals and Objectives

When defining the scope of this, the second and main study, two major goals were set. These goals hinged upon determining whether common forms exist within games and proving the existence of them. The goals were:

1. For each genre, determine what common forms can be seen amongst games of the same genre; this is dealt with in chapter 8: Genre Specific Common Forms.
2. Determine what common forms can be generalised across all gaming genres, this is the subject of this chapter (5: Player Status Common Forms) and the next chapter (6: Game Status Common Forms).

The purpose of this study is to identify common forms of expression within videogames. In doing so a logical and ordered set of steps will be followed:

1. Identify the maximum number of common forms that can be found within a genre (This can be seen in chapter 8 and in full on the enclosed CD ROM)
2. Use relationship modelling to progressively reduce number of forms by combining related ones (chapter 8: genre specific common forms).
3. Justify the common forms identified with suitable examples of that form in each of the ten genres and use this information to explain and discuss the occurrence of these common forms (this chapter and the next)
4. From this work universal common forms (with complete cross genre application) can be identified in addition to non universal forms (present in some, but not all genres) (chapter 7: Common Forms Identified).
5. Finally, further relationship modelling using the forms identified allows abstraction to take place, reducing the body of common forms down to those fundamental to videogames (chapter 9: Common Form Relationship Modelling).

The goals outlined being accomplished, will allow a set of common forms with proven relevance to videogames to be reached.

5.3 Overview and Procedure

For each of the ten genres chosen in chapter one (1.6 Methods and Protocol), common forms will be identified and discussed in depth with presence of the common form identified across both modern and classic videogames of the chosen genre and examples used to prove presence throughout.

These common forms are each examined in depth and in isolation across all major gaming genres identified with their presence (or otherwise) argued and justified.
The overarching goal throughout this thesis is to prove the common forms discovered to be valid instances of new tropes for the classification of videogame content. As the literary definition of the trope is adopted, as opposed to the first study where the rhetorical definition was favoured, discovery of each common form directly translates into discovery of a new trope, although only those common forms with application across all game genres (universal) are considered as valid tropes.

The first part of this study involved scanning videogames for any possible trope instances and then using this as a base for targeted abstraction. This forms the basis of chapter 8, whilst this chapter and the next follow on from that work.

Initially, any trope discovered is assumed to be effective only within the genre it was discovered in, but with evidence of their existence identified across genres, they are also proven to hold applicability to videogames as a whole. It is hoped identification of these tropes will ultimately inform development practices and allow the selection of appropriate common forms for the game to be created.

Common forms are first identified and then a description of the common form is given. Common forms are identified independently of genre although they are usually explained within the context of a genre to add setting and allow for the common form to be adequately justified with examples of its usage within commercially available contemporary videogames given wherever possible.

Videogame screenshots are frequently used to validate the presence of the common form and better demonstrate the context of its appearance. The appropriate use of such visual aids allows an appreciation of how the common form relates to the videogame environment and improves understanding on the reason for its prominence within the game environment or the HUD. After the explanation an attempt is made to justify the presence of the common form across the major gaming genres.

Clearly games of different genres vary significantly in the contents portrayed and therefore generalising common forms across genres is expected to be a major challenge. Where common forms are detected across genres effort is made to give justification and to explain the reasoning at work. An evaluation of each common form summarises work completed drawing on the findings of each section and hence on the evaluation of all common forms defined and identifies possible avenues for future work.

When looking for common forms an effort was made to look beyond simple gameplay mechanics such as the player pressing a directional key on the gamepad to make the character run or jump. These simple gameplay mechanics are defined at a very low level and whilst undoubtedly prevalent (at least within their respective genres), the number of unique actions a player is able to perform in just one modern videogame is often immense. Therefore, attempting to define common forms based on such low level interactions would cause the study to quickly become overwhelming and the value of analysing at such a low level is also debateable.

5.4 Status / Energy Depiction

5.4.1Energy Bars

Within action games such as FPS and platform genres, it is common to have a horizontal or vertical bar, which begins full (shaded) and depletes (contracts) as a player character sustains damage. This bar may also increase over time (in modern FPS games) or if the player collects a health power up. The bar may be complemented, or even replaced by a health icon such as heart or cross and a figure beside it to numerically indicate health (usually out of one hundred).

The simplest representation is a two tone bar where one colour represents energy and the other depletion. Some games take this a little further and use a three tone system where high energy is shaded green, moderate yellow, and red low but minor variations are common. For example, platform titles often use a row of red hearts which disappear as they deplete and complement this with a discrete lives count, usually an icon of the characters head with a number beside it.

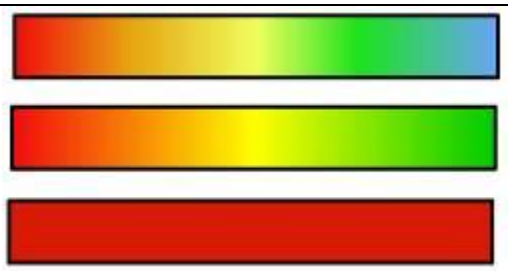


Fig 68. Common means of representing player energy in games. The top bar shows a range of four colour tones used to represent differing states of energy, the middle bar shows a simpler tonal representation and the bottom one simply uses a bar of a single colour with only depletion showing change of player state. Top right: Serious Sam 2 (Croteam, 2005) uses simple single tone bars and interestingly is one of very few shooters to use a discrete lives system, more commonly seen in platform titles. Below Doom 3 (ID Software, 2004) (left), Quake 4 (ID Software, 2005). Fig 69. Half Life 2 (Valve, 2004) favours numerical representation of health and armour levels.

RTS games too commonly feature a traditional health bar as described, although the scale changes somewhat as the status of tens, even hundreds of units may need to be represented. As such a single energy bar is rarely used. Instead, each player controlled and enemy unit has its own energy bar. To avoid a crowded, busy display, the game typically only displays status of selected units. This displays directly above the unit or on the HUD depending on the game. The function remains the same as in action and FPS genres.

Hence, these energy bars combined with the number of troops a player has provides a good indication of the strength of the player's forces and hence (potential for) game progression.

Fig 70. Age of Empires 2 (Ensemble, 1999) features the traditional health system where small health bars display over selected units and small icons represent each unit with mini bars displayed on the HUD. Age of Empires 3 (Ensemble, 2005) (Left) displays health of a major, named character in the HUD. Right: Command and Conquer 3 (EA LA, 2007) uses a similar, traditional, health bar system.

Unlike in the FPS genre, health bars may depict more than personnel and unit health, buildings too often have health bars as seen in Age of Empires 2 and Command and Conquer (Westwood, 1995). Furthermore, such titles often require the player to sustain supply of power and resources to the base or headquarters, which too are often represented with status bars. A common example is the base electricity or power supply level as seen in Command and Conquer. A particularly appropriate example as this title also uses the classic three colour tone system described.

Fig 71. The classic three tone colour system as used in Command and Conquer Red Alert 2 (Westwood, 2000) to display available power for the player's base. As expected green is a safe state meaning sufficient power, yellow means that power demand is high and red means there is insufficient power. When the red state is reached production of troops and vehicles slows down significantly and radar functionality is lost; HUD and environmental cues further communicating to the player the magnitude of the problem.

Energy bars are not common in driving games at all; it is often the vehicle, rather than a human character that is afforded prominence. However, there is still a clear need to communicate the status of their vehicle to the player. Games which combine driving with other genres such as Grand Theft Auto or Driver may well use energy bars in the same way FPS titles do i.e. to represent the health of the character when on foot. When driving, the player must manage both character and vehicle energy levels.

In simulation titles and God games, energy bars are rarely seen in their traditional context as there is rarely an observable on screen character, which, the player controls. Instead, the player rules indirectly over thousands. Status bars still appear although their usage is not the same as in action titles, primarily because, as a removed overseer, the player themselves is not in danger, instead the bars represent various abstract quantities relating to wealth and prosperity, resource supply and wellbeing and happiness of the populace.

As shown in the summary tables, at the end of the evaluation (5.4.4 Player Status Evaluation), point and click adventure titles like Monkey Island (Lucas Arts, 1990) or Broken Sword (Revolution, 1995) too lack traditional forms of energy representation with a presence level of just 3 out of 10. Like the simulation genre (6 out of 10 presence), life threatening situations are quite rare, the emphasis is on problem solving instead.

Fighting games align most closely with platform games but differ as they, typically, provide only energy bar with no lives count, which appears to indicate the player has only one chance. However, in most fighting games like Virtua Fighter 5 (AM2, 2007) or Dead and Alive 4 (Team Ninja, 2006), each fight has two or more rounds in which the player can prove themselves and hence one might consider these as taking the place of discrete lives observed in the platform genre. Scrolling fighting titles, a genre which enjoyed some popularity in the late eighties and early nineties on 8 and 16-bit home systems, match platform titles almost perfectly with a discrete lives count and a colour coded energy bar.

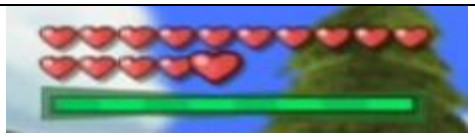
Fig 72. From top are the energy bars for Mortal Kombat 3 (Sculptured, 1995), Street Fighter 2 (Capcom, 1991), Streets of Rage 2 (AM7, 1992). These energy bars use a basic two-tone system with red representing depleted energy and yellow representing available energy. In Streets of Rage 2 icons represent player characters (top) and enemy characters (below). Fig 73. For comparison a shot from Virtua Fighter 5. Player portraits are clearer but information depicted is unchanged showing prevalence through time of energy bars.

Modern (3D) one-on-one titles such as Bushido Blade (Square, 1997), Virtua Fighter 2 (AM2, 1996) and Dead or Alive 3 (Team Ninja, 2001) make limited use of the environment to show player's status. On Bushido Blade the player character can be seriously injured to the extent of losing limbs. Whilst in the Virtua Fighter series the characters show no damage but the player can also win by knocking a competitor out of the ring. In the Dead or Alive series, the player can cause significant damage by knocking the competitor out of the ring. In Virtua Fighter the 'ring' is often a marked square like in a wrestling or boxing match, in Dead or Alive's outdoor, larger scale settings 'ring out' is typically a serious fall from a cliff, hill or building hence the apportioning of damage to the player character too.

Fig 74. From Dead or Alive 4 (Tecmo, 2005) combatants can be knocked out of the fighting arena causing significant damage potentially turning the whole bout around.

RPGs, just like shooting, fighting and platform titles do have energy bars but share aspects with RTS titles too as on most occasions, there will be more than one character's energy bar on screen. For clarity and immediacy, RPG titles complement or replace an energy bar with a numerical health representation, like that used in many popular FPS titles such as Doom (ID Software, 1993), Quake 4 or Unreal Tournament.

Fig 75. Damage inflicted or taken is displayed numerically. Left is Dragon Quest VIII (Level 5, 2005) whilst right is Suikoden IV (Konami, 2005). Fig 76. Below from bottom right energy systems for Skies of Arcadia: Legends (Overworks, 2003), Zelda: Wind Waker, Wild Arms III (Media Vision, 2003) and Final Fantasy X are shown. Zelda's energy system whilst consistent in the series is not consistent with energy representation in other RPG titles favouring hearts over a bar and number system.



This allows the player to see exactly what damage characters can deal (to enemies) and take (from enemies, poison, traps etc), important in the genre, to allow the player to judge the effectiveness of changes to their armour and weapons set up and the innate strengths and weaknesses of individual characters.

RPGs are hugely complex with many variations in the different sub-genres (e.g. real time and turn based) making them a difficult genre to analyse comprehensively. For example, for each of the (numerous) player characters in a battle, there could be several different energy and status bars such as health, special power, mana bar. Experience points and character statistics such as attack, defence and intelligence may be represented by a bar but are almost universally represented numerically too so changes can be easily gauged.

Furthermore, the display changes dramatically throughout the course of the game. In 'usual' exploration, no status bars might display, when navigating game menus, the player may access experience level and statistics, when in a battle, energy bars and other relevant information e.g. mana and special power levels might display. As this example shows, RPGs present a very good example of context sensitive interface menus and HUD that changes according to player's location and interactions possible. These context sensitive interfaces are used across genres but mostly seen in RPG, RTS and simulations.

Platform games may also replace the traditional energy bar with a line of hearts which disappear as energy is lost or a pie where segments lost fall away.

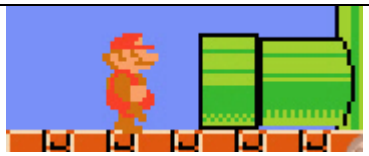



Fig 77. Display of status on Sonic the Hedgehog (Sega, 1991) (left) and Super Mario Bros (Nintendo, 1985) (centre) and for comparison Mario Galaxy (Nintendo, 2007) (right) where the display goes between blue, yellow and red to denote status. Fig 78. Below Blinx: The Timesweeper (Artoon, 2002) and Zelda: Wind Waker both use rows of hearts to represent player health, a long standing traditional metaphor for health.


5.4.2 Alternate and Abstract Status Representation

Although energy bars are a common mode of status representation, they are by no means the only one. Many games use multiple types of representation to reinforce their communication. There is the iconic mode where an easily recognisable icon represents energy e.g. the character's likeness, a line of hearts etc. Symbolic where a single key word or words are used to reinforce the communication such as "energy" or "health" and numeric where energy is represented as a number, usually out of one hundred to emphasise status changes and danger states. The latter mode is typically favoured by the FPS game e.g. both Doom and Quake (ID Software, 1996) use numeric forms of status representation.

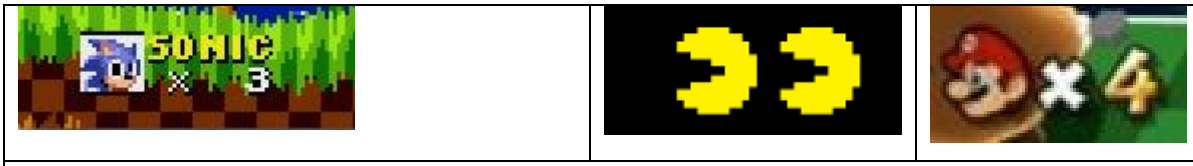


Fig 79. Discrete energy systems in Sonic the Hedgehog (left), Pacman (Namco, 1981) (centre) and Mario Galaxy (right) In Sonic and Mario a simple count is displayed next to an accurate icon of the characters head where as in Pacman, the lives are accurate depictions of the entire character.

Driving games are an excellent source of alternate modes of status representation combining and complementing each other.

Fig 80. Left and Right (above) images from Grand Theft Auto 3 (Rockstar North, 2002) show the visual car damage system where the car is physically dented and bodywork falls off, then white smoke plumes from the engine before (right) the engine sets alight and the player has mere seconds to escape or be killed.

The most obvious means of showing car status is by changes to the on screen depiction of the car; an environmental damage system. Damage is reflected instantly by appearance of car's bodywork.

Fig 81. Modern driving games like Dirt feature realistic car damage modelling meaning the status of the car can be seen at a glance and without HUD or interface elements.

Physical damage also impacts upon handling, top speed, gear changes, electronics and more, all of which can be communicated to the player through the game controller too using force feedback. Sound is an excellent facilitator with the sound of a damaged engine and gear box changing substantially, the engine whining and gearbox clicking as it struggles to select the desired gear.

Indeed, visual depiction of the car alone is quite limited as a mode of damage indication and, if the player chooses an in-car or bonnet-cam view, can go completely unseen. Plus there are many kinds of internal damage, which appearance of car bodywork fails to communicate such as state of the tires and suspension. Therefore, many driving games such as Gran Turismo (Polyphony Digital, 1998) or Dirt feature a simple plan view of the car, rarely more than a rectangle with coloured points, with each point representing a major part of the car such as tyres, suspension, axles etc. The colour changes, typically through the classic three tone system to represent wear and tear on that part as the race progresses.

This all combines to prove that driving games feature a rich combination of status indication devices, making strong use of visual, auditory and tactile feedback in their status portrayal. In this regard, driving titles are some way ahead of other genres, where status indication tends to be predominantly visual.

Fig 82.

Both images Colin Mc Rae Rally 2005 (Codemasters, 2005). This title uses a plan view of the car with damage represented by colour changing through white (no damage (left)), yellow, orange and red to represent serious damage. Right: low to medium damage.

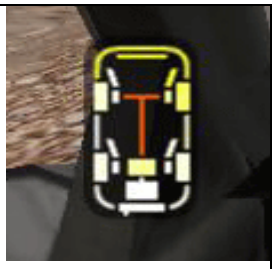


Fig 83.

Simulations too use environmental cues to show player status, although the focus is far wider than just one object like in driving games. In classic examples of the genre such as Sim City 2000 and Populous, the entire play area can be considered an indication of player progression. If the player is doing well, houses will spring up on free land and develop, soaring into splendid apartments and skyscrapers. Centres of commerce and industry flourish. However, if the player makes bad choices e.g. placing a pollution heavy coal power plant in a residential area or becomes greedy and raises taxation, houses, shops and businesses will be left derelict and deteriorating eventually turning the once beautiful city into a slum.

Such titles feature feedback from advisors (e.g. transport, building, emergency services etc) and a range of graphs and overlays to further diagnose problems. Just like the driving genre, the simulation genre has a whole host of methods to communicate status. However, unlike the driving genre all these methods are predominantly visual in nature.

Within simulation and RTS titles, one can broadly consider resources and cash to take the place of energy and lives in the action genres such as platform and fighting games. Whilst simulation and RTS games do not have such clear failure states, running out of resources completely often brings progress to a halt in much the same way that running out of lives in a platform title might.

Even platform games have 'simple' resources titled collectables. These are scattered throughout the game levels and form yet another mode of status indication. Acquiring collectables will eventually lead to a reward, most commonly an extra life or power up. In addition, in some games such as Sonic, even having collectables protects the character from enemy damage; Sonic is not killed if he is carrying rings, but will drop all rings collected.

Fig 84. Sonic is injured and loses all his rings in Sonic 2 (Sega, 1992). Despite its age the amount of environmental feedback on player status is impressive, rings are scattered all over and Sonic/Tails are clearly shocked about the attack. Finally, "rings" counter flashes red.

Collectables can be further likened to the resources of the RTS genre; in modern 3D platform titles, there are commonly multiple types of collectable available, each with different effects just like most RTS or simulation games offer a range of resources.

5.4.3 Genre Transference

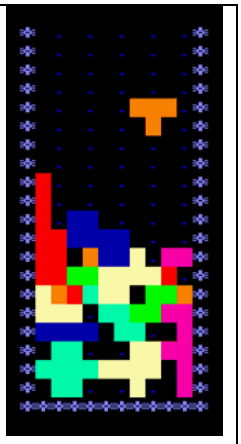
Within the three action-based genres of shooting, platform and fighting, status indication is most commonly indication of the health of a human (or animal) player or an AI controlled character. Status indication encompasses all genres. However, a distinct 'transference' of what is being represented can be seen. This reveals a number of interesting trends. The first is generalisation, in the RTS genre status tends to refer to groups of units, vehicles and even buildings, whilst in simulation titles it can refer to hundreds or thousands of people; the welfare of an entire city or the quality of a shopping or industrial estate.

Another good example of transference can be observed between the action genres platform, fighting, FPS and driving. In driving games the car takes the place of the player as the object of primary importance, the player must carefully guide it through the track and protect it from harm (damage). Therefore, in driving games, typically, no information is given on the player's character at all, the car has taken their place and all status information that would have related to player character energy/status now relates to the 'energy' of the car instead.

However, perhaps the biggest transference can be seen in classic examples of the puzzle genre like Tetris, Columns (Sega, 1990) and, more recently, Bust-a-Move 4 (Cyberfront, 2000). In these games, the play area forms the primary mode of status representation.

Taking the purest example of this genre, the original Tetris; the solid black background is the amount of energy/progress and the further down the screen it extends (from the top), the better the player is doing (more lines cleared). Meanwhile, the higher the blocks extend, the more the player is struggling and in danger of losing the game. Of course, even in the losing state the player could get the piece they need and clear several lines putting them close to the ideal (winning) state again. However, this just serves to strengthen the parallel as in a platform or FPS title the player might be close to being killed (little energy) but could discover a power up at any time returning them to a strong 'winning' state.

Fig 85. Columns and Fig 86. Tetris. The height of the blocks in the play area gives a direct depiction of how close the player is to winning or losing and could even be likened to a continuous energy bar (left) in an action title.



This trend can be seen in the vast majority of block matching puzzle games, although it is worth noting, the effect is reversed on Bust-a-Move 4 as the screen actually fills with bubbles from the top downwards.

This concept of direct environmental status representation is not unique to the puzzle genre; many earlier titles share this form of representation including classics Space Invaders, Frostbite (Activision, 1983), Pacman and Q*Bert (Gottlieb, 1982). These examples are now briefly considered. In Pacman the depletion of the pills dotted around the maze presents a direct depiction of level progress as the level is complete once all pills have been collected.

Fig 87. Here in Pacman the player is beginning the level; most of the pills are still to be collected. The player knows exactly how far through the level they are, as the game communicates this. There need only be a minimum of data on the HUD. So in this example progress could be compared to the bar (Fig 88) demonstrating the player just begun the level.

In Frostbite (fig 89) and Q*Bert (fig 90) the changing colour of the ice plates (Frostbite) and blocks on the pyramid (Q*Bert) also provide an accurate account of level progress.

Fig 89. Albeit a simple representation the colour of the ice shows the players progress through the level. Cleverly the temperature display actually acts as a timer; the player must get into the igloo before it counts down. Indeed considering limitations of the Atari 2600 platform, it makes impressive use of visual cues; when a level is complete fire lights inside the igloo prompting or attracting the player towards it.

Q*Bert is a little more advanced as, in later levels, it is possible for the player to change the blocks through three or more different colours meaning player progress through a stage can decrease too, a notable difference from Pacman and Frostbite.

Fig 90. Q*Bert. In this title the colour of the blocks changes as the character jumps on them, sometimes through a number of colours. The level is complete when all blocks have been changed to the required colour. The title also demonstrates the effective use of colour as a method of progress indication.

This is something which aligns the game a little more closely with the block matching puzzle titles like Tetris and providing an even closer parallel with the energy bars of action genres too, which as observed, can go up and down.

When examining the RPG genre, strategic turn-based RPGs allow the player to command all their units on the battlefield and the simple physical representation of the units on the battlefield provides a direct representation of the player's health in the same way remaining aliens in Space Invaders does. If the player's character is killed, it disappears from the map.

Fig 91. The player commands their army on the battle grid in Fire Emblem: Path of Radiance (Intelligent Systems, 2004). The number of troops on each side could be seen as a status representation but accuracy as a predictor is not absolute as it fails to take account of character abilities, level or health.

However, in Shining Force (Sonic Software Planning, 1993) and Fire Emblem (Intelligent Systems, 2003) the game screen can scroll to show more of the overall battlefield and so the units on screen at any one time may not be representative of the player's entire army. Furthermore, for each unit there is an associated health bar which one may might not necessarily be able to determine simply by looking at the unit; it is more complicated than the binary dead or alive of Space Invaders, in Shining Force or Fire Emblem each character has a continuous health bar and numerous possible status effects such as poison or blindness.

Sports titles feature 'meters' which look and function very much like the energy bars of fighting, platform and FPS titles but typically represent shot power rather than energy. As sports titles place their player in fairly ordinary 'safe' situations, a traditional energy bar, would be something of an irrelevance in a sports game so it's function changes to match the needs of the game.

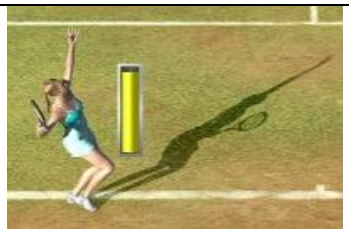


Fig 92. In Virtua Tennis 3 (Sega, 2007) a power meter displays next to the player character with the bar moving upwards; as it gets higher it also gets faster making the fastest speed (shown in red) very hard to hit.

Though not universal, some sports titles might disregard the classic three tone colour system or even turn it around, using red to show strong (generally desirable) shots with yellow mid power and green used to represent low powered shots.

Fig 93. Wii Sports (Nintendo, 2006) a bar displays to the left showing the power level of the shot. With enough force it is possible to hit a shot that goes beyond the power meter bar. The meter turns red; warnings as these shots are highly unpredictable and easily go off course.

5.4.4 Player Status Evaluation

There are a number of interesting revelations about the depiction and communication of player status discussed in this chapter. The work done to date demonstrates communication of player status is a vital component of games, something with its roots stretching back to the earliest titles such as Space Invaders and Pacman yet prevalent even in current games.

The idea of environmental representation of player status is particularly interesting. One could be forgiven for assuming its origins lies within driving or even shooting titles, and has developed only over recent years. However, it actually dates back to Space Invaders and a number of early arcade and home titles of this era. Perhaps the best example comes from Tetris, where player's progress can be seen by how many blocks are within the play area; the filling of which effectively mimics the filling of a traditional HUD based health bar. This kind of representation is even more direct than environmental health systems adopted in modern shooting games as within Tetris the game effectively is the mode of status representation and status is communicated in a natural manner without the need for extra props such as flashes of red to denote health loss in a first person title.

Many classic titles including Space Invaders, Tetris, Pacman, Q*Bert and Frostbite all offer communication of status directly from the play area.

An interesting point of view is; newer titles are actually some way behind older titles in their aesthetic design and make up. The older titles elegantly encapsulate the player's health, status and game progress into the environment minimising the data-load on the HUD and maximising the, then limited, screen space. By contrast modern titles usually require some kind of unrealism in the environment, HUD or both to achieve the same goals.

As shown on the summary table at the end of this evaluation, the only genre where clear and consistent examples of player status are lacking is the traditional point and click subset of the adventure genre. Hypotheses for this are:

- A lack of enemy characters in the game environment
- A lack of situations where the player character's life is in danger
- A focus on discussion and puzzle/problem solving as the primary goals i.e. a low action quotient.

As the summary table demonstrates, apart from in puzzle and adventure titles, aspects of player status indication are prevalent across genres. However, the information being communicated varies considerably; not all bars are energy bars like those seen in the FPS, platform or fighting genres. In sports titles bars may represent the power of the players shot whilst in RPG titles they may represent the increment of character statistics after a level up and in a simulation may relate to the contentment of the general population, the genre transference observed. We can still find similarities, however. Despite representing different information the information represented in each genre is either:

- A direct depiction of the player's status (direct player status)
    - Level Progress
    - Health Bar
    - Armour Bar
    - Special Power
- A depiction of information that is appropriate and important to player status (indirect player status)
    - Population satisfaction/happiness
    - Financial status
    - Urgency of objective
    - Available time

From this we have the concept of two types or modes of player status. The direct mode focused on player character health and the indirect mode; focused on factors which impact upon player health and/or success at the game in some way.

In this chapter, the term 'genre transference' was introduced, in which, a distinct move from direct to indirect modes of status representation can be noted when moving from action-dominated genres such as FPS, driving and platform genres to strategic genres such as simulation, RTS and adventure. The RPG sits between the two extremes and hence inherits characteristics of direct and indirect player status such as a whole range of health and status bars for the player and allies. However, indirect modes exist too such as basic resource management i.e. fighting and trading to maintain cash flow, the existence of a consistent currency system.

Fig94. Energy / Status Indication			
Genre	**Level**	**Details**	**Examples**
Shooter	10	Energy bars increase (grow) or decrease (contract) to denote player status. Environmental energy systems complement or replace this. Also commonly represented numerically (100=max)	Call of Duty, Call of Duty 2, Far Cry, Crysis, No One Lives Forever 2, Quake 4, Doom 3, Half Life 2
Sports	5	Rarely energy, often used as visual representation of shot power; common in tennis/golf	Virtua Tennis 3, Wii Sports, Tiger Woods Golf 2007
Puzzle	4	Energy bar rare, environmental cues e.g. appearance/animations, e.g. number of lemmings	Lemmings, Pikmin, Bust-A-Move 4, Puyo Pop Fever
Driving	8	Energy bars / car diagram used but often environmental / tactile (car appearance / handling)	Driver, Colin Mc Rae: DIRT, GTA: San Andreas, GTR 2, Ridge Racer 7,Forza 2,PGR4
Strategy	8	Energy bars for each unit / building, environmental cues also e.g. damage buildings / vehicles burning / smoking	Command and Conquer, Age of Empires 2, Warcraft 3, Starcraft
Simulation	6	Success at achieving goals and satisfying needs often depicted with conventional bars	Sim City 4, Sims 2, Rollercoaster Tycoon
Adventure	3	Action adventures may have bars, traditional point and click titles rarely have energy bars but some titles have occasional sections where the player character can die	Broken Sword, Monkey Island, Beyond Good and Evil, Fahrenheit
Role Playing	8	Energy and status bars common but may only display during battles or menu screens, numerical representation also very common	Final Fantasy 10, Dragon Quest VIII, Suikoden IV
Platform	8	Classic titles tend to favour discrete (lives) systems or a combination	Sonic, Super Mario, Super Mario Galaxy, Donkey Kong
Fighting	10	Single energy bar for each combatant (usually at top left and right of screen) Modern titles may use environmental cues to reinforce this.	Street Fighter 2, Mortal Kombat 3, Dead or Alive 3

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

5.5. Non Player Characters

This common form refers to characters not part of the player's team or party and the interactions with these characters, be them friendly, hostile or benign. It is common, when thinking of characters the player encounters, to immediately think of hostile enemies. However, the characters encountered may be friendly towards the player and their cause, e.g. offering some advice useful to the player's progression. For example, RPGs frequently use characters within the game world to divulge important information about the game and features. This avoids taking the player out of the game for a separate tutorial stage or worse still requiring the player to leave the game altogether and read a lengthy manual. Meanwhile, in adventure titles, these characters may be encountered on the player's travels that have to be interrogated for vital clues.

This common form may equally relate to neutral characters such as civilians or bystanders that neither hinder nor help. As all characters, helpful or not, take time to draw and animate, most characters will serve some function, even if it is only visual i.e. making an area look crowded. In some RTS games the player might be able to negotiate with neutral parties or initiate hostilities if negotiation attempts fail.

The third type of NPC is outright enemies who openly take hostile action against the player. In the FPS, this involves enemy soldiers trying to shoot the player. Here player is given no option of surrender or negotiation and enemies will attack, even if the player is not holding a weapon or making any attempt at hostility.

Hostile NPCs are most commonly seen in shooting, platform and fighting titles. In action games, the player has, over many years, been conditioned to expect NPCs to be hostile by default and attack on sight and this assumption is rarely disappointed. Sometimes this overly predictable behaviour can seriously jar with what we know of the world around us and the rules we operate on in real life.

For example, in FPS titles even (impartial) bystanders or officers of the law will indiscriminately attack the player character even if the player is not carrying a weapon or making any attempt at hostility.

Fig 95. In Far Cry, hostile characters attack the player on sight regardless of the player's actions.

In fighting titles, NPCs are hostile by default, the player is taking part in a fighting tournament so hostile activity must be expected.

Fig 96. In Dead or Alive 4 and indeed almost all one-on-one fighting titles, there is only the player and their opponent or enemy. Fighting titles, unlike games from most other genres rarely feature the concept of neutral or allied NPCs.

In platform titles like Mario or Sonic it is not clear exactly what either hero has done to upset the piranha plants (Mario) or monkeys (Sonic) but, nevertheless, they are hostile. Platform titles like FPS games are dominated by hostile characters. There are standard enemies, dispatched with one or two attacks. These enemies often have limited movement range and can only detect the player if they are close.

Fig 97. Sonic 2: standard enemies the player would encounter within the levels of a platform title which can be dispatched with just a single attack or avoided.

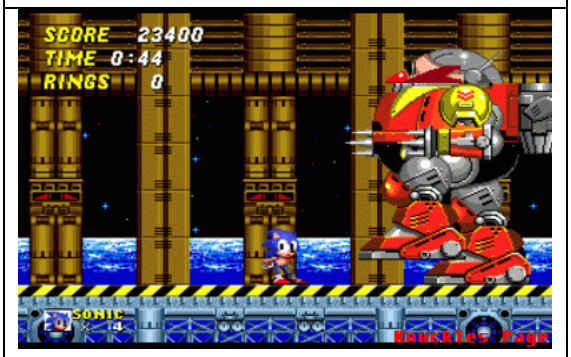


Fig 98. The final end game boss; one of the most challenging bosses Sonic has to face within the game. Bosses are never dispatched with a single hit. Usually three to four hits is sufficient yet placing these is difficult on very well armoured bosses like this one.

The second type is the end of level bosses. These enemies are rarer but large and powerful. They might only take a handful of successful attacks but finding the weak spot and aiming successfully is a challenge.

Later 2D and modern 3D titles introduced the idea of neutral characters the player can talk to for general information. Examples can be seen in Super Mario Sunshine and Super Mario Galaxy. Other titles like Sonic 2 and Donkey Kong 64 (Rare, 1999) had allied characters that could accompany the main character helping with specific challenges.

Fig 99. The friendly villagers the player meets in Super Mario Sunshine. The player is free to talk to these villagers by approaching them and pressing the appropriate button. The player finds the villagers in the between level hub (town) and also on some levels.

In some FPS games, the enemies are best avoided than confronted. This simple concept grew a whole new sub-genre of stealth games where avoidance, not elimination of enemies was rewarded. Indeed, strong examples of the genre such as Metal Gear Solid (Konami, 1998) would actually penalise the player for killing enemies.

	Fig 100. In Metal Gear Solid and other stealth based titles the player's goal is to stay out of the enemies sight at all cost and avoid all contact with and stealthily eliminate the enemies.

Although enemies dominate, a number of (usually military or police forces) FPS games afford the player a team of comrades. Special units like the medic are (literally) a valuable live saver.

However, this genre also hosts some of the most annoying examples of friendly NPCs, NPCs which seem to have been created merely to hamper player progress. Typically upon rescuing a trapped ally e.g. prisoner of war, kidnap victim etc, the player must then escort this character out of harms' way back to the 'safe zone'. This is known as an 'escort mission' (Giant Bomb, 2010).

These allied NPCs are, reliant upon the quality of the AI NPC control programming and even in the best of games it is common for this to be quite basic with NPCs getting stuck or confused in moving through complex structures such as a multi-floor apartment block. Many players find these escort missions a major annoyance, despite the plot furthering, character bonding purposes they serve. Players tend to be quite dismissive of such missions and might (negatively) label them as 'baby sitting' referring to the, still somewhat crude, nature of the in-game AI (TV tropes, 2010).

	Fig 101. Metal Gear Solid. Important allies such as the player characters commander or instructor might advise the player or give them briefings indirectly via telephone, radio or computer.

The adventure genre, much like the sports genre, is somewhat different. Here the player is unlikely to meet the same kind of openly hostile characters as in the FPS, fighting or platform genres, yet not all characters are allies either.

Often the problems adventure games pose revolve around the concept of retrieving an item or piece of information, its holder is not willing to give freely. Resolving such problems may involve finding an item, choosing particular conversation lines or creating some kind of temporary distraction. Whilst sometimes mildly dishonest, such interactions are rarely as visceral as those seen in the FPS genre for example.

Fig 102. Escape from Monkey Island (Lucas Arts, 2000), the player is free to converse with characters they meet freely but these characters may not provide the most useful information until the player helps them in some way.

Friendly characters may or may not accompany the player on their adventure but are likely to give advice and/or hints and tips e.g. Sam and Max in Sam and Max: Hit the Road (Lucas Arts, 1993), George and Nico in Broken Sword etc.

RPGs are, in terms of this common form, unique in that the disposition of the NPC (friendly, neutral, hostile) depends upon the location, in which, the NPC is encountered. Within dungeons and generally during world map exploration, the majority of NPCs will be hostile e.g. monsters, wild animals or other warriors. The exception is where the player is sent into the dungeon to rescue a trapped character. By contrast enemy characters are almost never seen in towns and villages or within houses, only friendly or neutral characters reside here.

Fig 103. In Suikoden II (Konami, 2000), towns and villages often provide a safe area where the player can converse with other characters and buy supplies without the usual random battle sequences and hence threat of attack is (usually) non-existent.

RPGs therefore operate in distinct zones which govern much of what can happen in the game, including the characters a player encounters and the activities possible e.g. converse, trade and rest or fight and explore.

Just like the FPS, many conflicts are unavoidable, enemy characters will engage the player even if their actions are not hostile or even if the player character has developed to be several times stronger than the enemy characters. However, a notable few turn-based strategic RPGs do offer the player some opportunities to alter the course of battle.

Fig 104. Fire Emblem, presents an exception to the norm, the player can avoid conflicts with certain characters by initiating communication instead of attacking, these characters might call off the fight or join the player's team (Schneider, pg 1, 2005).

Friendly characters may join the player as team mates or else offer advice e.g. on game strategy or controls. Neutral characters are most commonly merchants; who offer valuable services but at a price.

As shown in the summary tables at the close of the evaluation (5.5.1 Non Player Characters Evaluation), within driving (5 out of 10 presence) and puzzle (2 out of 10 presence) games characters are not particularly important to the core gameplay. Indeed, a number of titles in these genres have no concept of characters e.g. Pole Position (Namco, 1982) or Outrun (AM2, 1986) (driving) or Tetris (puzzle). However, within the driving genre, in particular, player selected avatars are gaining some prominence and beginning to become an accepted, albeit minor, part of the gameplay.

One might liken other drivers to hostiles or enemies, although this is by no means a clear cut distinction as the enemies in FPS for example. In fact, games like Dirt 2 (Codemasters, 2009) demonstrate the friendly, easy going camaraderie, which, can be seen even between opposing drivers. In this game, drivers once previously raced against join the player as allies in later team based events. They are actually more like friendly NPCs. A further example comes from Ford Street Racing (Razorworks, 2006) in the communication encouraged between team mates.

Fig 105. Ford Street Racing: the player's goal is not only to win the race, but ensure that their team mates also finish in good positions. The player has to switch between cars in their team and issue instructions to the AI.

Neutral characters are difficult to discern in this genre, much like the puzzle genre. However, one might consider driving games where you can employ team mates, such as Juiced 2: Hot Import Nights (THQ, 2007), to be neutral, as like merchants, they are provide a valuable service but are paid for their services.

The sports genre is much like the driving one; the boundaries are not set in stone. Is the other player necessarily a hostile enemy just because you play a match against them? For highly competitive players this could be the case, at least for the match duration. As in the driving genre there is little in the way of concrete examples of neutral characters too; the officials who ensure the rules are upheld and the audience may fit this category.

Fig 106. A doubles match in Virtua Tennis 3. Whilst usually a one-on-one sport, doubles matches allow the player to team up and benefit from the other player's skill and experience. This can help new players to get a foothold in the available tournaments.

RTS titles have clear examples of allied, neutral and opposing sides, but in a wider sense than FPS, platform or RPG titles. Here more units are involved; it can be factions groups or whole communities.

In many RTS games the plot creates the context and demands certain factions are the enemies, with whom diplomatic negotiations are impossible. It is often necessary for a meaningful story that there be an opposing force, yet it can be limiting that the player must fight with one faction whilst they may negotiate for peace or even become allies with another. An example can be seen in Command and Conquer where the 'good' GDI fight the 'evil' NOD; these sides are always opposed as the needs of the game dictate this.

Likewise if mission conditions include the elimination of a specific faction then this requirement, generally, precludes any peaceful settlement. This is a little arbitrary and artificial as in reality alliances can change at any time with a number of catalysts for change. However, many RTS games do afford the player the option to negotiate with neutral sides, perhaps through trade, or helping them eliminate a mutual enemy.

Fig 107. In Age of Empires II, war is a necessary evil, although negotiations are often possible with neutral parties.

The player having to prove themselves trustworthy to neutral sides mimics events of RPG and adventure titles, which generally require the player accomplish specific set tasks to move on. In the wider sense one might even liken it to the way a player starting out in GTA has to prove their worth to gangs they want to work for, or even the stunts a player must perform in the opening sections of Driver to prove their worth as a getaway driver.

Missions which require the player to protect and defend an allied faction can be related to the NPC protection missions of FPS titles and share some of the same frustrations and failure states e.g. however poor and misguided the allied side's tactics are, the player must protect them for the duration of the mission.

Simulation or God games have an even more indirect view and like driving or sports titles, it is hard to identify any real 'enemy'. There may be competing city mayors or theme park operators but does that really make them enemies? Indeed, Sim City 2000 encourages the sharing of resources and tourists between cities, making the notion of opposition seem questionable. As the summary tables show, whilst the city is undeniably bustling with activity, the player's contact is minimal. Indeed, beyond advice received from advisors, the player is disconnected from other characters hence the (5 out of 10) variable common form presence in the simulation genre.

Fig 108. In Sim City 4 (Maxis, 2002) the player can create rail, subway and sea links with neighbouring cities improving overall prosperity and encouraging more people into the player's city.

5.5.1 Non Player Characters Evaluation

As the summary table at the end of the evaluation demonstrates, a clear majority of games feature characters allied to the player's cause, neutral and, of course, characters which are hostile towards the player, something which is prevalent throughout all genres. Indeed, this is often how the core threat of the game is presented through embodiment within human (or otherwise) characters.

In some genres, most strongly the RPG and adventure genres, inter-character relationships are essential for game progress and such games feature varied characters. Interestingly, the adventure genre appears to be a complete opposite, of the fighting genre, in terms of characters represented. Within the fighting genre, the only character type portrayed are hostile characters in the form of the opponents the player fights.

However, in adventure titles the player rarely, possibly never encounters characters, which are openly hostile. These differences might be seen because the core gameplay and objectives of the genres are vastly different. Within adventure titles, communication and problem solving are fundamental aspects, yet by comparison fighting games simply pit characters against each other in a test of strength and skill.

Furthermore the prevalence of the common form seems to be affected considerably by player role in the environment. Where the player partakes directly in game experience (action and adventure based titles) such as in the FPS or RPG genres the form is strong. If the player takes on a more removed role as in RTS or simulation titles the extent of the common form seems to be weaker. This is a trend seen over several common forms and provides an interesting starting point for further study.

However, within generalisations applied such as allowing cars driven by a player's team mates to be considered in the context of characters within the racing genre and allowing the avatars a player chooses in a puzzle title to be considered as a (weak) form of player character in the puzzle genre, this common form enjoys some applicability across genres.

Fig 109. Non Player Characters			
Genre	**Level**	**Details**	**Examples**
Shooter	9	Enemy characters will attack the player on sight without warning or opportunity for negotiation. Friendly characters might be advisors and neutral ones the civilians the player must save.	Splinter Cell, Metal Gear Solid, Far Cry, Crysis, Call of Duty
Sports	5	Enemies are the competing players but can also be neutral or friendly outside of a match. The sense of allies is not so clear in non-team games.	Virtua Tennis 3, FIFA 2006, NBA 2007, Tiger Woods PGA 2007
Puzzle	2	Very weak, enemies in the opponents the player plays against, no neutral, allies might be the characters that deliver tutorials/game rules.	Bust-A-Move 4, Puyo Pop Fever, Dr. Robotniks Mean Bean Machine
Driving	5	Character types observable: enemies are opponent drivers, allies as team mates.	PGR4,Grand Prix 4, Ford Street Racing, Race Driver
Strategy	6	Less focus on the individual and more on the group or faction yet missions frequently include neutral, allied and enemy parties	Command and Conquer, Empire Earth, Rise of Nations, Age of Empires
Simulation	4	Quite limited as the only obvious allies are the advisors and often no clear enemy, other operators could be seen as neutral/opposing.	Sim City 4, The Sims 2, Theme Park, Theme Hospital, Vegas: Make it Big
Adventure	8	Interaction and manipulation of the characters the player encounters is a key part of the game. The player rarely encounters openly hostile characters	Broken Sword, Monkey Island, Sam and Max
Role Playing	8	A variety of characters although hostility depends upon the players location with friendly/neutral characters in towns and hostiles in dungeons.	Dragons Quest VIII, Fire Emblem, Final Fantasy X, Shining Force,Wild Arms III
Platform	6	Enemies are most common as in FPS, neutral characters may offer advice and allies accompany	Sonic, Super Mario Galaxy, Super Mario Sunshine
Fighting	3	Weak. Only enemy characters are common	Street Fighter 2, Final Fight

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

5.6. Items

This common form firstly verifies the items in the game environment but also goes a step further and examines the interactions the player has with these items and how the items are actually used by the player character. This also fulfils the function of providing some metrics by which the relevance of the items common form can be judged across each of the genres e.g. how many items does the game offer, are the items all of one type e.g. weapons or does the game permit the player to collect and use items of multiple types, are items optional extras or essential to the players quest etc.

For this common form investigation of the RPG genre seems to be a reasonable starting point as titles of this genre clearly do task the player with the collection of items and the proper application of such items is essential to long term success e.g. purchasing or finding new weaponry and armour to equip, purchasing medicinal supplies to use.

As the summary table at the end of the evaluation (5.6.3 Items Evaluation) verifies, items themselves are undeniably a cross-genre common form. However, the classes or types of items a player can collect and the diversity of items available informs us of the actions a player can perform. Items also inform of the game's purpose and provide essential motivation through player rewards. Major items are also almost invariably used as narrative devices to further the games plot.

5.6.1 Types and Classes of Item

As the summary table demonstrates (5.6.3 Items Evaluation)**,** the most varied and diverse range of items comes from the adventure (9 out of 10 presence) and RPG (10 out of 10 presence) genres. In both, the player has the option to amass several items of varying types. However, RPGs clearly have the most advanced inventory and item management systems of all genres. Furthermore, they also have the most varied types of items including collectables, currency, and restoratives for health and mana, revival items and curative items for a whole range of conditions including poison, sleep, petrify etc.
In addition, there are various types of weapons such as axes, swords, staffs etc and within each type are several individual weapons of varying statistics.

In terms of restorative items, food items are common, along with specialist life giving herbs and potions. Lastly, most RPGs feature permanent or temporary statistic boost items; a form of power up. These items will typically increase one character statistic by a few points making the character stronger overall, just like a 'bonus' level up.

Adventure games lack the sheer quantity of items seen in RPGs and the advanced inventory management systems to cope with so many items. For most adventure games, these features are unnecessary as items cannot be traded or used on the player character directly and are intended only for use in specific locations and contexts. One might say they trade quantity for variety as in adventure games there is no limit on the strange items encountered.

However, multiple instances of the same item are almost never seen apart from special cases like currency, which itself is rare in the genre. This is in contrast to RPGs where the player can amass multiple item instances, sometimes up to one hundred.

Another major difference that informs of the differing goals of the two genres is that restorative items are not found in the adventure genre as the player does not have to fight battles and is (rarely) in a situation where they are likely to become injured. Furthermore, as character statistics are largely fixed in adventure titles, there are no items associated with character customisation, like weapons, armour or clothing.

FPS titles share a few aspects with RPGs in that there is usually a (simpler) inventory system in place and the player is able to amass multiple items with (limited) duplication allowed. The difference is mainly in scope; FPS titles allow a far narrower range of items to be collected. Typically the items are limited to weapons (generally guns) and basic restorative items e.g. a first aid kit with the option of collectable body armour. Though simpler than RPG, FPS games do have some layers of hidden depth in their inventory systems allowing collection and organisation of weapons according to type e.g. single handed fire arms, double handed fire arms, grenades, melee weapons etc.
Furthermore, a strategic angle is added in that the player is typically only allowed to carry two to three weapons with them at any one time. In this aspect, FPS titles are far more realistic than RPG or adventure games which typically place no or very few limits on the quantity of items a player may have with them.

Fig 52. The binoculars; an essential tool for player intention forming and route planning in Far Cry. Below the binoculars a basic inventory displays showing the key card and explosive.

In both sports and driving games the range of collectable items is very limited. Sports titles most closely mimic the FPS, there are items players can use but these are typically limited to those most appropriate for the sport e.g. racquets, trainers and apparel in a tennis title. Indeed, whilst rarely essential to the sport, a number of sports titles allow the player to customise their avatar with new clothes or even give them a makeover.

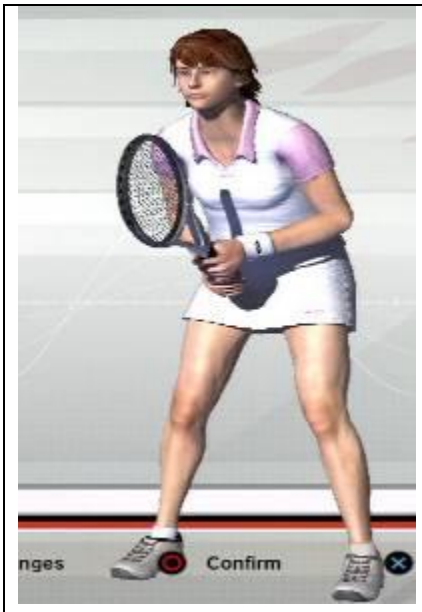


Fig 110. The player is given a realistic and detailed live preview of their character which updates to display the changes a player makes to character attire and equipment. The player can choose between any attire or equipment they have won or bought; so effectively the equipment page becomes an inventory of all the available equipment and attire, in some ways, very much like the equipment screen seen in RPG titles.

The way a player installs or 'equips' new customisation items or parts in a driving or sports game could be likened to a highly simplified version of the item and character management screens prevalent in RPGs.

Depending on how broad ones definition is, driving titles which allow car customisation and modification, actually feature many items in the parts a player can purchase and install. If one is willing to exchange car for character, the car customisation options in an advanced driving title like Gran Turismo 5 or Forza 3 are actually approaching character customisation screens of RPGs in terms of features and complexity.

Fig 111. Gran Turismo 4 (Polyphony Digital, 2005) allows the player to choose from a range of parts. Parts already purchased have a tick through them. Hence, game keeps track of purchased items, like an inventory.

Furthermore, the trophies, awards, cash and even cars obtained for winning races and championships are each themselves other types of items. Games which log trophies won and features garages so the player can view their cars further strengthens the presence of the form and the emergent connection between driving games and RPG.

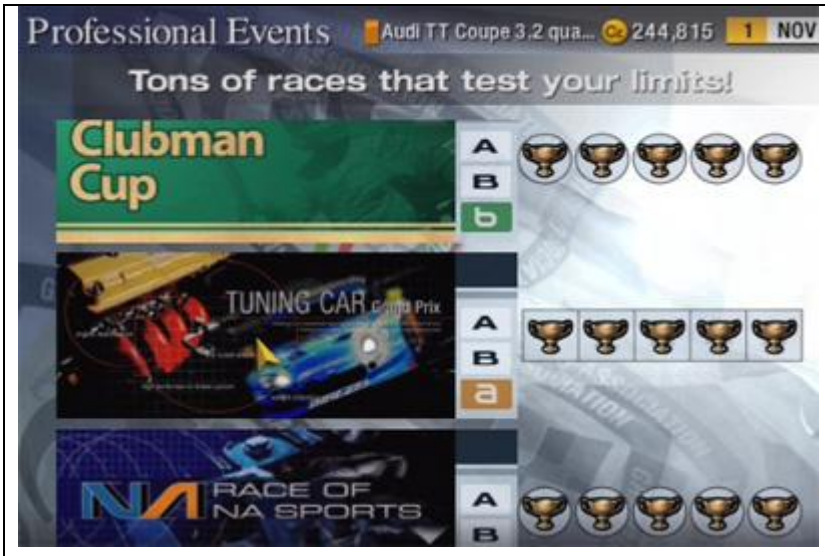


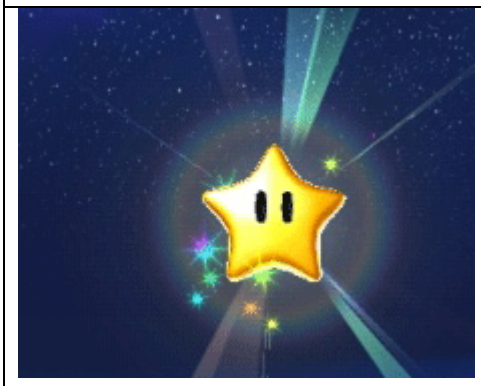
Fig 112. Gran Turismo 4 keeps a record of all the championships the player has competed in and medals won; an inventory of the awards the player has attained.

As the summary table (5.6.3 Items Evaluation) shows, both fighting (just 1 out of 10 presence) and puzzle titles do not have clear examples of this common form. In puzzle games the player is trying to eliminate the items, the falling blocks in a block matching game. However, no concept of long term item acquisition or collection exists.

In fighting titles, most combat is fist based. In titles that allow weapon usage the player does not customise their character to the extent they would in an RPG (if at all).

This common form enjoys moderate presence in platform games (6 out of 10), which are something of a unique case. Typically they lack any sort of inventory system and many early examples limited items to collectables e.g. Sonics rings, Mario's coins and the odd power up.

Fig 113. The main collectables of the Sonic games are rings (left) and chaos emeralds (right). Fig 114. In Mario the main collectables are coins (right) and stars (left).



Some have even developed to allow the use of items or tools. This is particularly common in platform titles that integrate puzzle aspects. Looking at past videogames, both Manic Miner (Software Projects, 1983) and Jet Set Willy (Software Projects, 1984) tasked the player with collecting a whole range of items from the rooms of a house. However, there was no persistent inventory, the items were never actually used in the context of the game and so they served a similar purpose to the collectable and so are an analogue of the rings in Sonic or the coins of Mario.

Fig 115. Mario uses a key to unlock the level gate. Note the empty box at the top centre of the screen. This can be used to store a power up the player has collected, acting as a basic, single item, container.

As the summary table (5.6.3 Items Evaluation) demonstrates, items are rarely a vital component of strategy titles (3 out of 10 presence). However, unlike most games of its genre, the strategy game Commandos (Pyro Studios, 1998) allowed player controlled characters to discover, collect and use items within the game world, or more commonly, from the bodies of incapacitated enemy soldiers. Each character has their unique inventory with limited item space. To overcome the inventory space limits, characters are even able to swap items with each other to ensure each character ends up with items they can actually use. The Hidden and Dangerous (Illusion Softworks, 1999) titles also allow player characters to collect weaponry, tools and defensive items in a similar manner.

Fig 116. The inventory screens of Commandos 2: Men of Courage (Pyro Studios, 2001) allow the player to see exactly what items each character is carrying and available inventory space. Transferring items is simply a matter of dragging it to the desired inventory. The inventory is highly iconic; text descriptions only display when the mouse pointer is hovered over the item.

Simulation titles much like RTS and puzzle games tend to consign item collection to a minor part of the gameplay, if it is present at all. Of course, the sheer variety of simulation titles released over the years, particularly on PC ensures there will always be exceptions.

In the Sims 2 (Maxis, 2003), the player chooses items out of an extensive catalogue of furniture to furnish their home. Whilst the game has no inventory system as such, the house in its role as container could be seen as a stand in inventory. The game possesses a surprising range of items to purchase and use, including kitchen and home entertainment equipment, seating, storage and more. Individual sims (virtual people) may even exchange small items themselves such as food they have cooked, chocolates and flowers.

Fig 117. In the Sims 2 the house could be seen as an inventory for items the player purchases.

Black and White (Lionhead, 2000), another somewhat pioneering and unconventional simulation title also allows the player to interact with and manipulate objects within the gameworld. This can involve stacking rocks to build a wall; hurling them at buildings and drawing fish up from the sea to feed villagers. However, this remains a weak example, as there is no concept of long term item storage (inventory) or the item belonging to an individual rather than being part of the environment.

5.6.2 Item Location and Usage

We now move on to consider how items are discovered and the ways they can be used. The second point is particularly salient as single use items and arbitrary usage locations have been a bone of contention among players for many years. This seems to be a problem that affects adventure games more than others due to their linearity.

These factors tell us more about the type of game and the extent to which the game is reliant upon this common form. The location and uses of items are diverse. Predominantly within RPGs; the most obvious location to acquire items is shops in towns and villages. Usually items are sold according to type and with dedicated weapons and armour shops for health and magical items. Items can also be sold, though usually at far less than they retail for (typically about 1/3 to 1/2 value).

Some games even recreate an economy, where item prices can vary considerably between locations adding aspects of realism and strategic planning.

	Fig 118. Chests often signify valuable items or monetary reward, a clear attractor (Fencott, 2003). However, many titles also capitalise on the player's attraction to the chest, often booby trapping them or making the chest turn into a monster the player must fight as shown in Wild Arms III.
	Fig 29. The player collecting an item in Final Fantasy X. Note the textual prompt telling the player the item that was in the chest. Textual, rather than iconic depiction of items in chests or containers is common, presumably for clarity and, in the past, to minimise technical overheads.

Items may be given e.g. for successful quest completion or else found in chests (most common) or simply as a result of searching the environment. This is usually most effective in towns, where hidden items are typically found in containers like pots or vases. In a clear diversion from reality, the player can even search inside other people's houses and keep what they find without penalty. Elder Scrolls IV: Oblivion (Bethesda Game Studios, 2006) presents a major exception to this, where the player will be hounded by soldiers, jailed and branded a thief if they so much as touch an apple in someone's fruit bowl.

Finally, players can even make their own items. Through apocraphy new potions can be mixed. Some games allow the player to cook too, as seen in Harvest Moon, mixing together different kinds of foods to create tasty meals, or an inedible mess if they are unsuccessful.

Fig 119. In Dragon Quest VIII the player is allowed to mix items to create more powerful variants and new items. The Atelier Iris series also allow a player to mix items in a similar way. This does add interest, although such titles tend to have a specific set of recipes very much like fighting titles have a specific set of special moves the player can perform. Hence they tend to feel rigid, only allowing pre-defined recipes rather than encouraging player creativity.

Whilst an interesting diversion from traditional RPG gameplay tenets, the accepted mixes of food and herbs are typically very limited with even minor deviation from the pre-programmed recipes resulting in failure. Indeed, the pre-set nature of the recipes seen in most role-playing games means in actuality, they have far more in common with button lists for combo attacks in fighting games than the real art of cookery. The only difference is that twitch based button combinations are replaced with slower, methodical trial and error of item combinations.

Adventure titles are quite different, in that, important items are never bought; a good portion of the core challenge comes from locating the items in the game environment. Occasionally, items themselves act as containers for other items just like the vases and pots in RPGs.

In adventure games finding a key hidden inside the pages of a book or a jewel inside a locket are fairly common and well known. Adventure titles may also feature item combination although this is typically far simpler than potion mixing or cookery in RPGs and can be as simple as combining batteries with a torch to light a dark tunnel. A player may have to trade with a character, or give a specific item to a character to advance. For example, in Monkey Island, the player must present three items to the pirates in order to prove their status as a pirate. The player cannot advance to the next part of the game until this has been done.

Fig 120. Monkey Island 2: Le Chuck's Revenge (Lucas Arts, 1992) presents the player with a range of varied locations with interesting items and characters.

Items are fundamental and the main facilitator to solving puzzles. Indeed, items seem to take a central role above the character as the main enabler to game progress.

FPS games limit items to weapons primarily and apart from limited trading and shopping options, they come predominantly from the game environment; specifically from enemy NPCs. The primary method of finding new weapons is for the player to incapacitate enemy NPCs and steal their weapon, which falls to the ground for collection. Whilst defeated enemies may disappear, the weapons they leave and their location are often persistent (at least for the level/stage duration) so the player can backtrack for much needed supplies.

Whilst most games fail to simulate the wear and damage old, used weapons from enemy NPCs might have, Far Cry 2 (Ubisoft Montreal, 2008) does an excellent job in that regard. Weapons collected from enemy NPCs, though varied and powerful, jam often, requiring time and effort to un-jam and eventually break completely, forcing the player to throw the weapon away and, likely, leave themselves unarmed in the middle of a fire fight.

However, brand new weapons purchased at the in-game weapon shop jam and break far less frequently. The game is rare amongst FPS titles as most make no distinction between purchased weapons versus old, used weapons. Even extending this principle over genres, a distinction is rarely made between new and used items. For example in Gran Turismo 4, if the player cannot afford a new car, they can purchase the used one more cheaply, yet somewhat oddly, the extra age, mileage and general wear does not impact upon performance or reliability at all, a clear deviation from reality.

Returning to the FPS, tools such as night vision goggles, access key cards and binoculars are found from time to time and once found these stay with the player (apart from single use key cards) and can have multiple uses, even over different levels.

In driving games, cars and parts are commonly bought in a single gamewide shop or, as in Gran Turismo 4, manufacturer specific car shops may be found on the world map. Cars and parts can also be won e.g. by completing specific championships or by completing set challenges as in Colin Mc Rae Rally 2004 (Codemasters, 2004). In Juiced 2: HIN, cars can be bet in pink slip events with the winner taking away both cars.

In freeform games like GTA and Mafia: The City of Lost Heaven (Illusion Softworks, 2002), cars can be found unoccupied or stolen from their drivers, although 'pure' driving games tend to frown upon this practice, allowing the player only to use cars they have won or purchased i.e. the cars they have in their inventory already.

Most driving games do not allow the player to acquire items directly from the race track, although an exception can be found in 'party' driving games like Mario Kart, which even has a small (one item) inventory at the top centre of the screen, which is filled in when the player drives over an item cube. The futuristic racer Wipeout (Psygnosis, 1995) employs a very similar system. Such simplified inventory systems have most in common with classical platform titles like Mario.

The collectables of most platform titles might be hidden e.g. question mark blocks in Super Mario, secret areas in Sonic. Yet many collectables are also clearly visible as the player traverses the level and well within reach; the rings in Sonic provide a very good example of this, they are scattered liberally, even a player completing a speed run of a level in the original Sonic game could probably amass fifty plus rings with ease.

Generic collectables like rings or coins, typically, cannot be used directly by the player; instead they combine to give specific rewards once the required number is amassed e.g. Sonic awards a chance to play the bonus stage at fifty rings and an extra life at one hundred. Most items can be collected from the game environment and their positioning defines the item in terms of its rarity and value.

Considering item location and use, sports titles are simplest to analyse. Items are either awarded (for tournament wins) or purchased at shops. Unlike RPG and adventure genres, there is no concept of the player finding items themselves.

5.6.3 Items Evaluation

Items are a common form with presence across all gaming genres. However, items are not of equal importance in all genres. The collection and usage of items is most important within the RPG and adventure genres. Also item usage and collection is important to the FPS but the common form is considered slightly weaker here because of restrictions on types of items collected i.e. weapons and defensive items.

Items are of moderate importance within driving, platform and sports genres where the common form is clearly still present but not to the same degree as in its genre of origin. Within the RTS and simulation genres items hold only very limited importance and can only be seen in use in limited subsets of the genre. Lastly, the usage of items within fighting and puzzle genres is marginal but still exists in an extremely limited form.

Ten years ago it would have seemed unthinkable. However, modern driving games like Gran Turismo 5 (Polyphony Digital, 2010), Forza Motorsport 3 (Turn 10 Studios, 2009) and Project Gotham 4 (Bizzare Creations, 2007) have developed advanced item management systems like those seem in the RPGs to help the player manage the cars in their garage and parts they have for them.

The player can apply a whole host of paints, vinyl styles and designs to the car adding weight to the notion that in a driving game, the car takes the same role as a central character in an RPG.

Fig 121. Items			
Genre	**Level**	**Details**	**Examples**
Shooter	7	Item collection and inventory organisation is a major part of the genre but the types of items carried and used is limited.	Far Cry. Crysis, Call of Duty
Sports	6	Items certainly prevalent within some titles but typically item types are limited to those with direct relevance to the sport simulated.	Virtua Tennis 3
Puzzle	1	Very rare and presence is marginal at best, possible weak example is the special block in Columns that eliminates blocks of same colour.	Columns, Robotnik's Mean Bean Machine, Bust-A-Move 4
Driving	6	Items can include parts applied to the player's car as well as power ups in karting and futuristic titles and even trophies awarded	Project Gotham Racing 4, Gran Turismo 4, Mario Kart, Wipeout, Street Racer
Strategy	3	Not present at all within traditional titles but limited use within the tactical squad based subset	Commandos, Cannon Fodder
Simulation	3	As with strategy it is rare and only seen within a few non-standard variations of the genre, it is generally not a major component of the genre.	The Sims 2, Black and White
Adventure	9	Essential component, the player collects a varied assortment of items with no restrictions imposed on type although items can only be used in a certain location, commonly only having one use.	Broken Sword, Sam and Max, Monkey Island
Role Playing	10	Hugely prevalent, the player will find hundreds of items over their quest and items are varied afford great opportunity for character customisation.	Suikoden, Fire Emblem, Dragons Quest VIII, Atelier Iris, Final Fantasy X
Platform	6	Limited to known collectables and power ups but some titles also feature weapons / tools.	Sonic, Mario, Blinx, Jak and Daxter
Fighting	1	Extremely rare, not seen at all in one-on-one titles but one example exists in scrolling titles.	Golden Axe

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

5.7. Level Selection

This common form refers to player progression; particularly whether the title is broken down into specific and coherent levels, stages or missions and the means by which the player progresses through these. Commonly, the game simply presents a linear set of levels, completed in a set order or the player is afforded the freedom to choose from a limited selection of levels they wish to play next.

5.7.1 Linear Level Selection

For more than forty years; the lifetime of videogames, linear level selection has been the primary way of advancing through any games. Although games have, in recent years, developed freeform objectives and leave more choices in the player's hands, the majority of genres (and games) are linear at heart.

In games with linear level selection, the game's content is broken down into a series of levels or missions and the player must complete these in a set order to advance through the game. Progress through the game is limited by its structure and the player can only take one path through the game, regardless of actions. However, within the confines of each linear level, the game may still afford the player considerable freedom to explore, engage opponents, search for items etc. So, in this example, although levels and stages may be chained together in a linear fashion as in early Sonic or Megaman (Capcom, 1987) games, the player has some freedom within each level.

Another subset of the linear game type is the on-rails style of play. These games originate from arcades and are most commonly seen in space shooting titles and then later in the vast majority of light gun shooting games like Virtua Cop (AM2, 1994), Time Crisis (Namco, 1995) or House of the Dead (Wow Entertainment, 1997). Most light gun shooting titles are both linear and have on-rails play. In addition, the wave of CD-ROM FMV based titles of the early nineties, where the player ‘explored’ locations composed entirely of grainy digitised video footage could also be considered linear and on-rails.

In on-rails games, the player typically has extremely limited control of character movement. In some instances e.g. almost all light gun games; the player gives up all control of character movement and simply controls the targeting cross hair. Other games such as early 3D shooting titles like Star Fox (Argonaut Software, 1993) or Panzer Dragoon (Team Andromeda, 1995) may only permit the player to alter their path in one axis e.g. the player might be able to dodge obstacles by steering their craft left or right but is unable to control height at all.

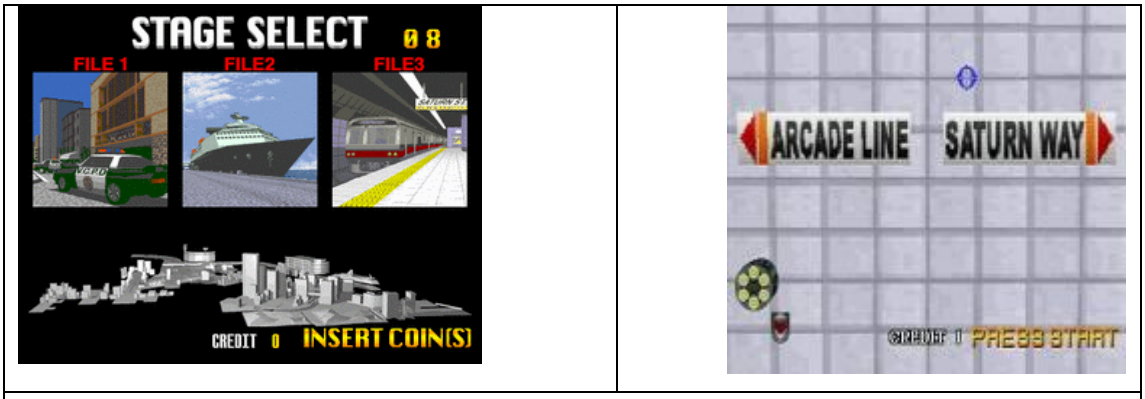


Fig 122. Virtua Cop 2 (AM2, 1996). Left image: stage select screen. The titles arcade heritage clearly shows with only three stages to complete. However, the image on the right shows the player can make choices on the route followed. Here an extra route has been developed for the home console (Saturn) version of the game.

Both adventure and survival horror games are also highly linear, although not necessarily on-rails in their gameplay. This is generally deemed necessary to create suspense, fright and tension (for survival horror particularly) and to ensure an involving, logical and coherent plot (for adventure and survival horror titles).

Adventure games rarely have levels as such, instead most feature a set of locations the player explores. As these locations are usually separate and self-contained, one might liken them to levels, although unlike traditional levels, the player can usually revisit them throughout the course of the game and changes will occur depending on the player's progress such as new characters appearing or events occurring.

What really makes adventure games linear is their structure; specific items must be used at a particular location and the player can only visit certain locations and characters when a series of conditions have been met and freeform exploration or action outside of the games locations in the manner one could in GTA, for example, is impossible.

Platform games almost universally feature levels and stages. In classic platform titles these had to be completed in a set order. Modern titles afford the player greater freedom in level choice. However, sectioning game content down into levels, stages, zones or worlds remains a platform game staple as does imposing some criterion upon the order these are completed in.

Fig 123. The map for Super Mario World (Nintendo, 1992). Each level the player completes displays as a point on the map with the player moving on to the next point and a trail showing the player's progress. Fig 124. Sonic 2 (and some titles of the era) use a simple splash screen.

Some platform titles, as early as the 8-bit era, allowed the player to take minor diversions, such as finding bonus stages, secret areas or even shortcuts to bypass a stage or two.

Despite the hugely more mature, adult styling and the great effort expended to create lavish illusions of freedom, the FPS game is structurally closest to the platform game. The terminology may change a little, the levels are exchanged for missions, operations or campaigns, yet the linear structure, largely, remains. As some FPS games, such as, Call of Duty (Infinity Ward, 2003) develops quite advanced narratives, it is likely this sectioning and fairly narrow path are needed to preserve the sense of narrative authority.

Nevertheless, some games such as Far Cry, Crysis (Crytek, 2007) etc afford the player phenomenal freedom within this structure. Far Cry and Crysis afford the player an entire island paradise to explore, vehicles to drive and superb opportunities to use the weapons and tools to their fullest potential. Mission objectives are sufficiently broad to give the player considerable choice in how to complete them.

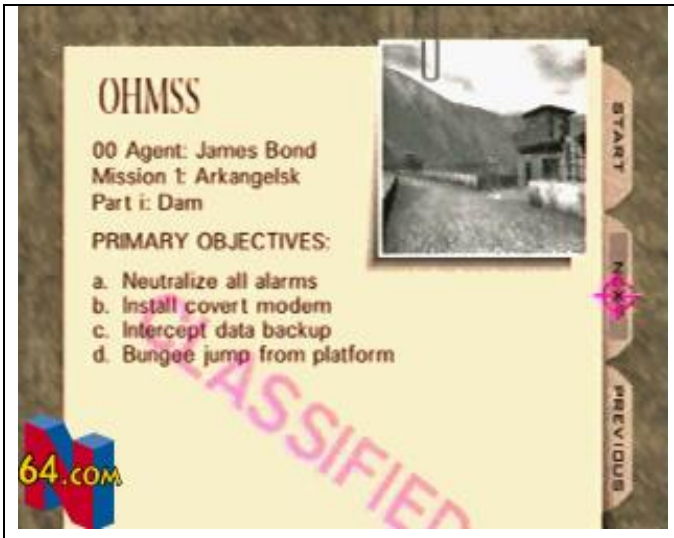


Fig 125. This image from Goldeneye (Rare, 1997), still acknowledged as a pioneer of console FPS gaming, shows a mission briefing with goals clearly outlined. Goldeneye allows the player to view and re-play missions completed; useful as the game features three difficulty levels with each difficulty tasking the player with completing extra objectives.

Both RTS and RPGs are primarily linear experiences. Despite this, RTS games tend to give the player some choices in terms of mission selection. Titles which allow the player to align themselves with a side such as the GDI or NOD of Command and Conquer or the three competing factions of Starcraft (Blizzard, 1998) or Dune II (Westwood, 1993), generally give each side different missions to account for the differing strengths and weaknesses of each faction.

Furthermore, some titles reward the player with the option to choose the next mission upon successful mission completion. For example in Command and Conquer, each mission is a portion of the world map and after conquering one, the player chooses the next from two or three options affecting the appearance, resources and winning conditions of the next mission.

RPGs are different; they do not section terrain off into clearly observable levels like platform games. However, there remains a clear division between different types of terrain to structure and regulate the experience. Some titles may limit locations a player can visit, initially to avoid the player character becoming involved in unwinnable battles. Common examples usually require the player to have a specific vehicle or steed e.g. the player needs to have a boat to cross over the sea. The dungeons dotted around the world map are the closest to platform game's levels and these reveal the linear structure at the heart of most RPGs. Dungeons begin small and simple, building in size and complexity over the course of the game, just like levels do in a platform game.

As it would be very frustrating, inappropriate and off-putting for most players to enter a harder, later dungeon near the beginning of the game, the central storyline binds together these dungeons, with the game storyline and quests adding structure and directing players towards challenges that are suitable for the characters experience level, equipment and attributes.

Meanwhile fighting titles are, perhaps, simplest of all, based on a simple linear ladder structure, where the player advances from one opponent to a stronger one for each victory. Scrolling beat-em-ups align most closely with platform games, with a number of levels, divided into stages, each to be completed in order, usually with no deviations.

5.7.2 The Illusion of Freedom

The previous section demonstrated how common a linear game structure is. Whilst this structure emerges clearly under analysis, the best games carefully hide these structures, so the player enjoys a gratifying sense of control throughout their gameplay session.

In recent years more games have turned to level branching to complement the existing level based structure. This feature is particularly common in light gun shooting games and was adopted in some survival horror games.

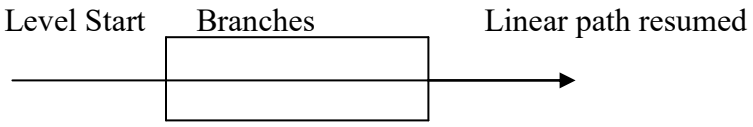


Fig126. The basic principle of level branching

The underlying principle of level branching is to allow the player limited control within the confines of the linear level structure. At a key point in a level a player, searching an abandoned police station (as in Resident Evil: Darkside Chronicles (Capcom Cavia, 2009)) might be asked if they want to inspect the cells or the cafeteria. Their choice would give a few scenes developed specifically for the player's choice before diverting back to the central thread of the level. Whilst a little crude, if used well, it can be effective, at least until the player has exhausted all the options. This is likely to be more of a problem for home (as opposed to arcade) games where the player can play the game for long enough to do this.

The concept of branching exists in other games too, namely the conversation branching seen in adventure, and to a lesser extent, RPGs. In RPGs usually after an important conversation, that advances the plot, the player is given a choice; usually of the simple binary agreement or disagreement kind. For example, after hearing from an inn keeper that an evil monster has kidnapped his two boys, the game may ask if you want to help.

Should one choose the less honourable path and decline the request, the game will, in some way, coerce you into taking the quest if it is essential to the plot (players usually can decline optional or side quests). Some, earlier titles even had particularly crude ways of doing this such as repeating the question until one selects the answer the game is looking for. More carefully designed games may provide an explanation for why the (divergent) choice could not be enacted e.g. you tried to escape but the door was barred.

Adventure titles also commonly use multiple choices or branches in their conversations. However, as conversing to acquire essential information is a much larger part of this genre, the options tend to be greater in number and complexity with some conversation trees consisting of several nested branches. Yet, the same principle as in the RPG holds true; a number of conversations will lead nowhere in terms of game progression i.e. dead ends. In conversations where the player is required to extract a particular piece of information, it might just be one particular choice out of four or five to get the required information.

FPS games go to great lengths to create the illusion of freedom in fundamentally linear levels. Far Cry, Crysis and Call of Duty are titles which achieve this particularly well. Far Cry and Crysis present environments so large and lavish that any level boundaries are soon forgotten by excited players eager to try out the possibilities for creativity. Call of Duty has much smaller missions by comparison and the player's path is far more directed lacking the wide open expanses of the former two. Furthermore, the player is, in some missions, required to stay with their squad, further limiting the potential for freeform exploration.

Nevertheless, as an on-going gaming franchise with more than ten successful titles, it is clear the Call of Duty titles are highly successful examples of their genre. Far Cry succeeds by letting the player direct their own fantastical action sequences, giving the player the tools they need and then leaving them to experiment. Call of Duty is a far tighter experience, allowing the player to develop more meaningful connections with the characters they control and their squad. Storytelling is tight, controlled and well paced.

5.7.3 Freeform Level Selection

What of a title with no clear level structure; that is freeform titles where the player is in charge of their destiny and no missions are enforced? In this case, the common form is weaker in presence yet can still exist. Even in the classic GTA series the player still ultimately completes set missions in order to see the games plot advance and unlock new areas of the city to explore, the real difference comes in the freedom a player is afforded between missions and in the mission they choose to accept. Also, such titles may not mandate the player completes all missions as the player chooses which missions to play.

It is not only choice of mission player is afforded great freedom in, this is also provided by the freedom given to the player in how the mission is completed for example a typical mission briefing in GTA is generally quite vague in what the player must do i.e. a mission might require that the player eliminates a member of an enemy gang.

In such a mission the player is given complete freedom in how this is achieved. The player could take the easy route and run them over in a car or be more sporting and beat them ‘fairly’ via hand to hand combat. Of course, it is quite likely the gang member's cronies or police might witness this and pursue the player creating a further problem for the player to solve, again left to their own devices.

In GTA, the player visits specific areas on the map to be given their mission. For example, to receive extra missions not tied closely to the games plot the player visits a bank of ringing public telephones in a park whilst missions centric to the plot typically have the player visiting the homes or businesses of the associated gang members directly. By entering a police, ambulance, fire vehicle or taxi the player enables extra missions related to the vehicles purpose, offering extra money. GTA was quite pioneering with this idea of making the player 'find' their missions in a kind of 'meta-game' but now the idea has permeated many other games, particularly of the racing genre.

As noted, a growing trend observable within the driving genre in titles like Need for Speed: Most Wanted (EA, 2005), is for the games races to be in a large, freely explorable environment, most commonly a city. Other locations e.g. garage, home, car show rooms etc are also all placed on the map with specific colour coded icons denoting their purpose.

Fig 127. Need for Speed: Most Wanted game map shows the extensive cityscape and available car show rooms, garages, safe houses and available race events with a different colour to represent each of the event types.

Need for Speed: Most Wanted, like GTA, allows the player to explore when not in a race. However, there are still limitations imposed by the genre (driving), e.g. the player never leaves their car. Races available are marked clearly by a large circle on the centre of the road, an icon inside denoting race type. The player can do available races in any order. However, there are limited races available for each of the games fifteen rankings so eventually the player completes, at least a majority, of the available races to progress. The player can visit the races on environment or if desired can simply jump to their home and from there access all available races from a standard menu listing so the player does not have to explore the city if they are not interested in doing so.

Fig 128. Need for Speed: Most Wanted uses coloured rings and an icon to represent the race event or building in the game environment. Cleverly the colour used matches the colours used on the mini (and full screen) map.

Many racing titles afford the player freedom over the races they participate in although typically in a career mode the player has to advance and improve their status to allow access to more exotic racing championships. This common form can be related to the presence of currency as it is often the player's total acquired points which determine the race events which will be open to them. An example comes from Project Gotham Racing 4, where kudos is the games currency and as this builds, player's world ranking improves. It is the improvement of this ranking which enables the player to partake in new races.

The player is often given choices outside of racing in terms of the championships and racing events they decide to participate in. Indeed, on titles which boast a career mode and a racing calendar it is normal for two or more events to be available to the player on the same date, meaning the player can only visit one of these, and must choose the one they think most beneficial or they believe their car and skills are up to winning.

Fig 129. The track editor seen in Track Mania United's (Nadeo, 2007) Puzzle mode. In this mode, the player must build a track they can successfully complete but with only a very limited selection of track pieces. Later levels require the player has a solid understanding of the titles gameplay such as what kind of jumps the cars can achieve.

The whole premise of a simulation title is usually to offer the player complete freedom i.e. a sandbox. Simulation titles often do not feature clearly identifiable levels. Nonetheless, there are still goals a player is expected to complete regardless of whether these come from a briefing or the wishes of the population or needs of the virtual people of the Sims.

As the summary table (5.7.4 Level Selection Evaluation) demonstrates, presence is limited in the simulation genre (4 out of 10)**.** Indeed, in a title such as Sim City 4 or the Sims 2 the player sets their own goals to work towards, whilst the Rollercoaster Tycoon series sets the player a number of scenarios to complete; each one with a specific set of criteria to meet, in order for the scenario to be complete, much like a level or mission in an action game.

Completion of each scenario does involve creation of a successful theme park as one would expect, different strategies and tactics are required in different scenarios. As each scenario takes place on a different plot of land, terrain features such as hills and mountains require careful planning and have impact on game difficulty.

Whilst the player does not have to complete scenarios and can simply play the game in sand box mode, the varied scenarios do form a substantial part of the core gameplay.

The main game mode of Theme Hospital (Bullfrog, 1996) actually sequences the content into scenarios delivered in a linear order, progressing in scale and difficulty in a manner that is unusual for simulation titles and could be likened to the platform genre.

Caesar 3 (Impressions, 1998) and other titles in this series adopt a similar approach to Roller Coaster Tycoon (Chris Sawyer, 1999) where the player is largely free to choose the buildings they construct but from time to time will be required to build specific constructions or as is often the case improve their rating with the roman empire by improving the standard of buildings and sending regular gifts of food and valuable items whenever requested. This title also features a number of different scenarios with associated requirements although building and management of settlements is entirely freeform.

5.7.4 Level Selection Evaluation

The concept of levels, missions, scenarios or races are almost universal across games, their presence is required to provide order to and structure the game experience. However, the level of freedom a player is given in choosing the level they wish to play varies dramatically between individual games and genres. Indeed, as the summary table shows, whilst always present, some genres such as the simulation and puzzle genres only have weak to moderate levels of presence.

Driving titles provide players with some of the most freeform gaming environments with Grand Theft Auto, Driver and Need for Speed: Most Wanted offering realistic recreations of entire cities. Whilst missions and races are still provided, the player chooses from any available and can exercise choice over the order they are completed in. The simulation genre as one would expect also affords players freedom, effectively providing a sandbox experience, positively encouraging creativity and experimentation. RPG titles offer the player significant freedom, in terms of exploration of available locations.
However, dungeons must be completed in a particular order to remain coherent. This is why presence in the RPG genre is scored at 7 (out of 10) versus simulation at only 5.

Platform and FPS titles tend to allow less control and require the player progresses through levels in a specific order. However, some titles may afford revisiting completed levels, perhaps to try them at a higher difficulty level or, as is often the case with platform titles, to use a newly acquired ability to reach previously inaccessible areas. Adventure titles, like RPG titles, often to an even greater extent, tend to be constrained by the linear game plot meaning, player can only progress in a pre-determined manner whilst sports and puzzle titles tend to offer the player a limited degree of control over the levels they play.

An emergent trend this section has revealed is that even the most freeform of games all have some form of 'hidden' sectioning and organising of the game's contents, which perform a similar function to levels in traditional 'linear' games. RPGs have quests, whilst RTS games have missions and simulations scenarios, they are all variations of levels and each perform the same function. The differences lie primarily in the size and boundaries of the sandbox the player is allowed to experiment in.

It is unsurprising that level selection is so common throughout games, even those which may not have clearly delineated levels. The reason is that level selection is linked closely to difficulty, a fundamental aspect of all games. The availability of levels offers a framework for a videogame to structure its various challenges around to ensure the player is presented with them in an appropriate and logical order.

Fig 130. Level, Stage or Mission Selection			
Genre	**Level**	**Details**	**Examples**
Shooter	9	Levels typically offered in a linear manner following the games plot and becoming progressively more challenging.	Far Cry, Call of Duty, Golden Eye, Crysis, Bioshock, Half Life 2
Sports	6	Doesn't have concept of level as in platform titles but match difficulty is often separated by rank; player rank determines what matches they can play	Virtua Tennis 3
Puzzle	5	Many titles have the concept of levels for the player to complete yet the playing field and goals remain constant throughout	Bust-a-Move 4, Puyo Pop Fever, Lemmings 2
Driving	8	Levels are generally offered by series or championship where the player is given free choice over a limited set of events.	Need for Speed: Most Wanted, Project Gotham Racing 4, Forza Motorsport, Gran Turismo 4
Strategy	9	Levels are presented in a set order with difficulty increasing with progression; the player might be offered limited choice over the next mission.	Command and Conquer, Dune II, Command and Conquer: Red Alert, Empire Earth
Simulation	4	Not a major component of the genre. Optional scenarios may be provided to add depth.	Roller Coaster Tycoon, Theme Hospital
Adventure	7	The player is initially guided into the game by the plot unfolding and can then travel between a set number of small locations	Broken Sword, Monkey Island, Sam and Max
Role Playing	5	Player is provided with freedom of where to visit next yet without obvious level structure this can leave player unsure of what to do.	Suikoden, Final Fantasy X, Dragon Quest VIII, Breath of Fire IV
Platform	7	Early titles allowed progress in a linear fashion only. Modern titles allow a restricted level choice.	Mario, Sonic, Jak and Daxter, Blinx
Fighting	6	Levels featured in one on one titles but difficulty inconsistent compared to scrolling titles which feature linear sequential levels like platform titles.	Streets of Rage 2, Final Fight, Street Fighter 2, Mortal Kombat 3, Dead or Alive 4, Virtua Fighter 5

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

6. Game Status Common Forms

This chapter discusses a selection of four common forms related to game status. That is the way in which the game's systems work to structure content and provide challenges for the player to overcome. The common forms which are discussed in this chapter are:

- Career or Story Mode
- Difficulty
- Speed
- Colour

Each common form will be discussed in its own section of the chapter with a separate evaluation of each common form at the close of its section and a table that evaluates the presence of the common form over the ten mainstream genres chosen for investigation. For information on the methodology used in the investigation done in this chapter please see 5.1.1 Methodology.

6.1 Career or Story Mode

This common form relates to the presence of an observable vocation or career path that the central player controlled character follows. Most titles based within recreations of real world settings will possess this common form to an extent. However, the strongest instances, should actually allow the player to develop and advance in their career, possibly even making important choices in the direction this advancement might take. This is known as an evolutionary career path, which the player can control and direct.

The second type is where there is a clear notion of player character career but it is not the primary focus of the game and hence the player is afforded little opportunity to develop it in anyway i.e. it only develops in response to the needs of the plot, the player has very limited control. These are known as static or fixed career types.

Finally, there are games that have no concept of a relatable, real world career for the player to follow. These games have no concept of this common form at all. As the summary table shows (6.1.1 Career/Story Evaluation), the puzzle genre (with only 2 out of 10 presence) barely has any concept of player character career at all e.g. what possible real world career could one relate Tetris or Bust-a-Move 4 to?

The block matching title Tetris, a template for many games, does not even have a player character and the 'world' is no more than a series of differently shaped falling blocks, there is no player career at all. It would be similarly difficult to decide what career path one has in Lemmings (Psygnosis, 1991) or as Olimar in Pikmin (Nintendo EAD, 2002).

Platform titles, with common form presence of only 3 out of 10, too lack any real world career paths. This primarily comes with the cutesy characters and style traditionally associated with the genre and the fact that many platform mascots such as James Pond e.g. in the Aquatic Games (Millennium Interactive, 1992) or Sonic are not even human characters. The closest to an example comes from Mario who is a human character and a plumber. However, the actual platforming activities in the game, apart from the odd pipe and diversion into the sewers, bear no resemblance to the profession at all.

Lastly in this section are fighting and beat-em-up titles. Something of a debateable choice as there are perfectly valid career paths depicted such as boxing, wrestling and martial arts. However, as the summary table shows with only 2 out of 10 presence, within the majority of major fighting titles, few actually take this concept anywhere. Few fighting games have career advancement and character development with a career path.

Next are FPS titles which, often, posit the player on a static career path. Many FPS titles put the player into exciting careers such as soldier, mercenary, law enforcement (SWAT/FBI etc). FEAR (Monolith, 2005), Max Payne 2, Call of Duty and Counter-Strike Source (Valve, 2004) all posit the player onto a military or law enforcement career path like those mentioned. Some of these titles such as Call of Duty 4 (Infinity Ward, 2007) actually give the player a dramatic, thoughtful and gripping portrayal of the relevant career. However, even the best representation in the FPS genre tends to be bound more to the demands of the game plot than the desires of the player.

As chapter five established, games can be truly masterful at creating believable illusions of control and freedom. Although, few FPS titles allow the player to control career advancement in any tangible way, many give the illusion the player is making the choices through effective narration and storytelling making the choices the on-screen character makes seem natural, common sense and exactly what the player would do in the same situation. One could consider this as a form of videogame myth (Bignell (2002, pg 23).

Perhaps a small element of conditioning exists too in the rewards games give for the player interacting and moving their character development on in line with the plot. It is a similar case for adventure titles, although in this case the careers portrayed are often less grand, more down to earth and as the genre hints, in most cases, the characters are putting the 'day job' to one side to go on an exciting adventure.

Some titles like Fahrenheit feature snippets of real police work such as piecing clues together in a logical order based on the evidence available. In recent years real 'career sims' have started to emerge such as the Crime Scene Investigation (CSI) (369 Interactive, 2003) and Phoenix Wright (Capcom) series of videogames. These do go much further in representing some of the core activities of these career paths and manage to simplify procedures so that players can realistically complete the games.

Trauma Centre: Second Opinion (Atlus, 2008) effectively simulates operations with real surgical implements and realistic conditions. The latest title in the series; Trauma Team (Atlus, 2010) takes this much further to represent five unique strands of medicine and includes operation, bone repair, endoscopy, general practice and pathology. Each strand is a credible self-contained simulation in its own right. However, Trauma Team, though a sterling example, lacks any real concept of career advancement within the five career types simulated, although the characters each go through personal journeys of self discovery.

Since, particularly in the turn based variety, the player gives up direct control of the units on the battlefield in RTS titles, it is considered that such titles posit the player as a distant commander rather than a soldier on the battlefield, whom the player would be cast as in a FPS title.

Although the earliest RTS titles did not consider it, newer titles have developed the concept of fighters who can either be trained or simply improve through combat practice. Another trend is the 'hero' character, a super strong character with special physical or magical abilities, who might either build in power with combat experience, or even level up as in an RPG.

An early RTS title, Cannon Fodder (Sensible Software, 1993) provides a very good example of soldier's abilities building with successful elimination of enemies. As a character gains rank they are awarded a military medal displayed above the head of the character when selected. As the character survives more missions their rank increases with better medals awarded each time. The game provides a strong challenge with no concept of base building but instead the player commands a small group, typically five soldiers or less, to accomplish missions usually by elimination of enemies and destruction of enemy buildings. The game was particularly difficult as soldiers lost in battle were not replaced. When the player is provided with more soldiers, perhaps for the next mission their rank restarts at the lowest. The title has many parallels with the newer Commandos series.

Fig 131. Cannon Fodder. Left the rank (using military insignia) displays above the selected troop. Fig 132. Right the surviving soldiers are congratulated.

The final section considers titles with dynamic, evolutionary career paths where the player can effect realistic and meaningful changes.

This is certainly true of the driving genre. These days almost all driving games attempt to simulate a driving career, regardless of whether this is a recognised and established branch of motorsport such as formula one or rallying, more niche sports like nascar or even illegal street racing which Need for Speed: Underground, Midnight Club (Rockstar San Diego, 2000) and Juiced 2: HIN simulate well. There are even careers for motorsports which don't even exist such as the fantastical stunt race tracks of Trackmania: United and the abstract challenges of Project Gotham Racing 4.

Many titles developed for home systems feature genuinely epic career modes. Games like Gran Turismo 5 and Forza 3 feature sufficient content to last dedicated players for months. More importantly, these titles are well balanced and have a carefully graduated learning curve. This ensures the player starts out with basic low speed vehicles competing in amateur level, low speed events, allowing new players to acclimatise to the controls and handling of different kinds of vehicles. As players gain familiarity, they can disable driving aids and switch from automatic to manual transmission, giving the precise control needed to manage faster events and more competitive opponents. These games also manage the provision of rewards very well, consistently rewarding good performance, not only with trophies but also with new cars, visual customisations and parts.

The license tests in the Gran Turismo series provide another real world parallel in how player performance is measured and how the player can demonstrate their ability to race in ever more challenging leagues. Furthermore, custom race entry requirements e.g. specifying a specific type of car or specific customisations be done, ensure that player gains a broad experience in driving a wide range of cars. This is another form of testing by ensuring player has proficiency in driving all types and performance classes of car, if they have not got this proficiency they will not advance any further, just like in a real career.

Another example comes from Driver where, at the start, in order to prove they can be a getaway driver, the player must complete a challenging set of manoeuvres in an underground parking lot (Fencott et al [3], 2010). As space for performing the tasks is very limited and some of the skills require significant practice, this early mission can prove challenging, perhaps too much so, since its completion is mandatory to progress, it may prevent some players even seeing what the real game has to offer.

In Need for Speed: Most Wanted the player must become the fastest street racer beating a blacklist of fifteen opponents. Before the player gets into the career mode though, cut scenes show how the engine of the player's car was sabotaged. The player must effectively fall to the bottom of the ladder choosing a basic car and win early races to facilitate purchasing upgrades and eventually better cars slowly reclaiming prior standing.

Throughout career mode, other street racers; allies or enemies frequently contact the player in a cut scene or via (virtual) mobile phone SMS messages to comment on player's progress, inform them about races or police presence and offer advice.

Project Gotham Racing 4 provides one of the series most accomplished career modes with the player starting out at the lowest ranking where they must compete in races and gradually build standing. Unlike Gran Turismo 4 where races are simply spread out across an on screen world map, in project Gotham Racing 4 a calendar depicts the current date and also the challenges available on that date. Therefore, the player is only allowed to compete in the championships available on that date. If more than one is available they will have to choose the one which is most beneficial or realistically achievable.

Fig 133. The race calendar for Project Gotham Racing 4's career mode. The player can only take part in events available at the current date. The year is broken into seasons and more (and higher profile) events become available each year.

Sports titles feature a dynamic career mode that operates very much like that found in the driving genre. The player begins as an underdog, rank outsider at the bottom of the world rankings and gradually advances by winning matches at more prestigious tournaments.

Fig 134. Initially the player registers in a tennis world tour and then proceeds to customise their character and right (Fig 135) must advance through quarter, semi and finals towards winning the trophy.

Within RPGs a split can be observed between games where player character career is central and where it is not. The high emphasis many of the major RPGs like the Final Fantasy series place on the plot necessitates that, even if there is a coherent career path, much of its development is taken out of the player's hands.

However, the Fire Emblem and Shining Force series do feature aspects of career progression. When a character reaches a specific level they can be promoted, changing the characters class, making them more powerful and the level count is often reset to one so effectively the character is starting afresh in their new class. An everyday analogue might be someone starting their first day after being promoted to a higher ranking job. Class upgrades might allow a character to use new weaponry and acquire new skills.

In many RPGs career promotions and class upgrades can be related to an emphasis on character development and customisation, demonstrating a strong bridging of these common forms. A connection with reality in that many RPGs celebrate career or class advancement with player rewards and/or a simulated ceremony e.g. in Shining Force class advancement is performed at a church.

Some RPGs feature a guild based approach where on joining a guild a player becomes a practitioner of a particular career. The guild might be likened to a work union in the real world. Elder Scrolls IV provides a good example of this where guild membership grants access to special quests associated with that profession, the player can even change guild mimicking a change of career in the real world.

Simulation titles are an interesting example. When one thinks of vehicle simulations like cutting edge flight simulators, which simulate hundreds of aircraft down to the finest details on their gauges and controls or city simulators that simulate complex economical systems it is undeniable that these titles simulate some of the most advanced and prestigious career paths very effectively.

However, one aspect such titles regularly fail to address is the idea of career progression. Perhaps some of the careers simulated do not have a straightforward progression structure or perhaps developers consider it more appropriate and manageable for the player to have just one, rather than several complex sandboxes to experiment in.

Exceptions exist, in Theme Park (Bullfrog, 1995), when completing the construction of one theme park, the player is allowed to sell it at auction and move onto a new park, larger, with more varied terrain. In Theme Hospital each of the missions is in a different hospital at a different location with new patients, designed as if the player was transferred to a new job with greater responsibility and potential reward.

Though a more casual, light-hearted simulation, Sid Meier's Pirates (Firaxis Games, 2004) does feature considerable opportunity for the player to become a better known pirate through advancing in the top ten pirates list and advancing through pirate ranks (difficulty settings) by meeting specific performance criterion. Players can move up or down ranks at any point in the game, depending on their performance.

Fig 135. In Pirates the player's career as a pirate ends (at least temporarily) when the crew becomes tired of long voyages and starts to get mutinous. At this point the player should divide up the wealth earned before the crew leaves taking the player's hard earned wealth.

Fig 136. This is the movie editing interface of The Movies (Lionhead, 2007), which posits the player as a movie director. Whilst not an exacting simulation of the movie industry, the game does provide a feeling of authenticity in the extensive editing suite provided and the awards ceremonies (Fig 137).

6.1.1 Career/Story Evaluation

Initially a career mode may seem at odds with the recreational setting of videogames, yet the main character following a career path of sorts is a staple of many games, perhaps because so many have jobs, this helps to ground the game in reality. Whilst presence is variable, the form certainly appears to have some cross genre applicability as well. This common form appears most prevalent within driving, RPG and sports genres.
Within driving games the common form is a somewhat recent addition, however, the reasoning behind this is relatively clear; the premise of a career allows some structure and organisation to be given to the games content, yet is not as arbitrary as simply providing them as a list of stages, levels, quests or races. Despite its recent development, careers have quickly become a standard for home console or computer driving games.

Within the adventure genre the career certainly exists but does seem quite limited by the linear style the genre takes to accommodate plot. A recent example comes from the CSI inspired series of videogames. Whilst popular with fans of the show, the CSI game was criticised quite harshly for its limited, linear gameplay making it little more than an interactive variation of the show (Peckham, 2003).

This is clearly at odds with a real life career where making successful choices is essential to advance. However, Trauma Centre (Kasavin, 2006) and Phoenix Wright (Harris, 2005) were better received and generally regarded as far more successful examples of career simulation. Nevertheless, such issues raise the question of whether the adventure genre is really suitable for career orientated games.

Perhaps it is the career common form that best exposes the inner battle of so many videogames, their conflict of plot and gameplay. That is, how to provide tense, exciting and most importantly, involving gameplay whilst providing sufficient context, background and characterisation in the plot. Whilst no games seem able to remove the limitations a plot imposes, the best games do an extremely good job of hiding them.

A definite emergent trend is the link between the precedence given to the story and the depth, quality, dynamism and advancement potential of the game's career mode. The trend observed is that when story tends to be given precedence e.g. in RPG, adventure and some FPS this (typically) leads to a weaker career mode.

In games and genres where story is not given precedence the game tends to have a stronger career mode e.g. sports and racing games tend to achieve a very strong sense of career, crucially these games put the player very much in control allowing them to (for example) configure and test all aspects of car set up, choose which events to race, which tracks to race on, race lengths etc.

Games which feature a high quotient of scene and context setting story tend to limit player control to avoid incidences where the player does something that the games programming or central narrative does not support.

Fig 139. The Presence of A Career or Story Mode			
Genre	**Level**	**Details**	**Examples**
Shooter	6	The player being on some kind of career path is common though rarely referred to outside of cut scenes yet some titles provide the illusion of career progression	FEAR, Mafia, SWAT, Counter Strike, Hitman: Blood Money, Max Payne 2: The Fall of Max Payne
Sports	7	Generally a significant part of titles of this genre. The player advances through sports series to become the world number one.	Virtua Tennis 3
Puzzle	2	Very weak, may appear as part of the games context but rarely applies to gameplay	Pizza Tycoon, Puyo Pop Fever, Zoo Keeper
Driving	8	Common across a number of driving titles. The player starts as a unknown in amateur events, moving up to world series though still quite rare in arcade orientated titles.	Gran Turismo 4, Project Gotham Racing 4, Forza Motorsport, Toca: Race Driver 3, Colin Mc Rae: DIRT
Strategy	5	Player's role as overseer never alters though characters under players command can rank up.	Cannon Fodder, Warcraft 3
Simulation	7	A clear and realistic career path represented although in a less hands on manner than driving or sports titles and less sense of career progression	Sim City 4, Theme Park, Theme Hospital
Adventure	7	Varied selection of career paths although sometimes career choice is incidental or steered by the games plot.	Sam and Max, Police Quest, Fahrenheit, Crime Scene Investigation
Role Playing	7	Career paths can be quite abstract but nevertheless are prevalent in many titles of the genre.	Dragon Quest VIII, Final Fantasy X, Wild Arms III, Elderscrolls IV
Platform	3	Any career the characters may hold rarely has any impact upon the gameplay	Super Mario
Fighting	2	Whilst technically a career path few titles capitalise on this by offering development opportunities like RPGs do.	Street Fighter 2, Mortal Kombat 3, Dead or Alive 4, Virtua Fighter 5

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

6.2. Difficulty

6.2.1 Traditional Difficulty Selectors

Many games allow the player to manually alter difficulty level as desired. The traditional (and still prevalent) way of doing this is by a simple selection menu presented to the player before the game begins where difficulty level can be chosen. Different games have different ways of defining and naming these levels; some indeed are quite humorous such as Lemmings, which offers: fun, tricky, taxing or mayhem levels of difficulty.

Most games will allow the player to choose between difficulty levels e.g.

- Very Easy
- Easy
- Medium
- Hard
- Very Hard

Although, games may not use the same titles for difficulty levels and it is also common for games to abandon the two extreme difficulty levels (very easy / very hard) and simply offer Easy, Medium or Hard settings. Traditional difficulty level selectors remain common on many recent titles and improve accessibility for different ability and experience levels. However difficulty levels should be matched to the target audience and are not appropriate to all types of game (Bateman, 2006).

Some games may 'hide' the harder difficulty levels from players until they have completed the game on the 'normal' setting. The reasoning is understandable; it ensures the player does not initially choose a difficulty level well beyond their capability and skill set, become frustrated and give up. It also allows for natural player progression and improvement over time at the game. Indeed, as Sweetser and Wyeth (2005) note, the player forms an emotional connection with the games content which strengthens over time where the player will complete the game to validate their investment in it.

If the player has completed the game once before, they have a considerably better chance of succeeding a second time as they had time to perfect strategies and can remember key events and goals of the game, not to mention enemy and hazard placement.

However, 'locking' difficulty levels is a somewhat controversial move too as it can seriously frustrate hardcore, adept players who are already highly skilled at the genre and really are ready to tackle the tougher difficulty from the outset. In addition, some players who are aficionados of the real sport or event prefer the realism of more advanced AI and reduced environmental and HUD based prompts that come with higher difficulty settings.

Some games, particularly those which are mission or level based, may allow the player to choose difficulty for each individual level before they start. A benefit is if the difficulty is pitched too far above the player's abilities, they can reduce it to get through the level allowing the player to see more of the game than they might see otherwise. This opens up the possibility for an interesting reward structure e.g. allowing the player to progress for completing a level on easy but offering extra rewards and incentives for completing it on normal and hard. Goldeneye provides an example of this structure; offering Agent (Easy), Secret Agent (Medium) and 00 Agent (Hard) difficulty settings for each mission with extra objectives to complete for each setting and more advanced AI with smaller player energy bar. The title also rewards players based on mission completion times.

RTS titles may feature a conventional difficulty selection option as in the action genre although RTS titles also introduce another aspect of difficulty selection. In Command and Conquer the player chooses to play as the noble GDI or the evil NOD, in Starcraft the player chooses between three races (two alien, one human), Terran, Zerg or Protoss and in Dune 2 (Westwood, 1993) the player chooses out of three houses with one offering the best technology, another stealth and another brute strength.

In many RTS titles, the player chooses which group they wish to forge an allegiance with, each group has unique strengths or weaknesses and, although by no means universal, it is generally accepted that some groups / races / teams make for a more challenging game experience than others. This could be likened to the 'old fashioned' difficulty selector but with aspects of player control as the player's ability to maximise the strengths of the group they control will affect difficulty considerably.

Fig 140. Starcraft showing the three vastly different available races. Top left: the Zerg alien base, right a Protoss alien base and units and left: a Terran (human) base being overrun with Zerg alien forces.

So although less obvious than easy, medium or hard distinctions, the group the player chooses greatly influences game experience. Furthermore, different groups may be tasked with different missions making each group seem like almost a completely new take on the game. This concept can be generalised to other genres in terms of character selection in action and first person titles and vehicle selection in driving titles as these aspects also affect the difficulty of any game.

Like RTS, simulation games can feature traditional difficulty level selectors as seen in Sim City 2000 where the player chooses starting money; with three starting amounts where the highest is the easiest way to play and the lowest the hardest.

Driving titles may feature traditional difficulty selection system like FPS. However, there are many finer levels of difficulty control within driving titles such as the option to enable or disable braking, steering and traction aids, manual or automatic gear selection and whether to display optimal racing lines on screen.

Fig 141. Ferrari F355 Challenge (AM2, 2000), despite its arcade roots, is a taxing and realistic simulation providing the player with driving aids for steering braking and traction as well as the (standard) manual or automatic gear selection.

Furthermore, the difficulty varies depending on type of race or event e.g. practice or time trial would be least demanding, effectively the player is just racing against their past lap times. A qualifying event would be more difficult as the player has to match the opposition's performance. Whilst a full race is even more difficult because not only does the player have to match the oppositions performance they must also successfully navigate around opposing drivers without crashing. Online racing is (potentially) even harder as the player can no longer take advantage of the limitations of AI drivers; a common complaint being them rigidly sticking to the racing line and not blocking overtaking manoeuvres.

Outrun, provides an interesting environmental difficulty system, the player selects difficulty of the game in the game environment. In Outrun, the player drives through a selection of short tracks known as stages. At the end of each stage, instead of race drawing to a close, the player reaches a fork in the road and must follow one of the two available routes, one to the left, one the right. Taking the left turn provides an easy track, a right a difficult one.

Fig 142. Outrun 2006: Coast to Coast (Sumo Digital, 2006) stage map. The way a player chooses preferred stage in Outrun remains unique to this day.

Puzzle titles feature difficulty controls allowing the player to choose a difficulty level to start at. However, sometimes this is presented under a different guise. For example, the classic Columns has difficulty levels but they are mapped on to stages in the game so level one might be setting easy, level five, medium and level ten, hard.

With each level the blocks would fall faster and regardless of starting level, by reaching a particular score a player could level up, meaning that even if a player starts on easy (1) they could still play right through to hard (10) and beyond, if they are skilled enough. Many block matching puzzle titles feature similar mechanics. Many puzzle games organise their puzzles by difficulty level, often letting the player switch between difficulty levels so they can try a different puzzle if they get stuck on one. Lemmings, provides this with four main difficulty levels each offering thirty unique puzzles.

Fighting games often allow the player to choose difficulty level as seen in the Streets of Rage series or in Final Fight (Capcom, 1991). However, there are extra layers of difficulty selection such as the impact the players choice of character has i.e. whether the strongest character is chosen at the expense of speed or a faster character at the expense of raw strength. Furthermore, scrolling titles like Streets of Rage (Magical, 1991) and Final Fight allow the player to choose (within boundaries) how many continues and lives they have. Therefore, skilled players looking for challenge can reduce these values, new players can increase them. Such games also allow a second player to enter at any time. Two players working together cooperatively also impacts upon the difficulty although in an interesting twist, continues remaining are shared between players to redress the balance.

One-on-one fighting games feature variable difficulty possibly through selected difficulty level, character or game mode e.g. whether to embark upon a full tournament, story mode or just a quick match. The addition of a human player either to fight against or cooperatively with, will have significant impact on the difficulty.

6.2.2 Player Interaction and Difficulty

Virtually all games provide positive reinforcement for level completion. Racing titles tend to use trophies, new cars and cash winnings. FPS, historical ones particularly, might award the player medals, cash or new weapons. Typically, there is a hierarchy to this; in racing titles it is almost universally gold, for first place, silver for second and bronze for third. Level completion time is certainly one of a whole host of factors a game uses to calculate player success at a game level.

The current generation of home consoles have advanced this idea considerably, largely thanks to the Microsoft X Box 360 and it's achievement system where the console tracks player progress across every single game, awarding the player persistent 'trophies' and 'points' that remain permanently in the player's profile for that console. The Merriam-Webster's dictionary website defines an achievement as a "a result gained by effort" or "a great or heroic deed" (Webster [2], 2010). Therefore, the achievement system exists to acknowledge and reward particularly noteworthy player activity and milestones at a particular game. Similar award systems have begun to permeate games across all platforms.

One might wonder how all this is related to a discussion of difficulty level, in fact it is central to difficulty level. All these optional awards, achievements and medals provide a whole extra layer of difficulty beyond any selector switch; to a large extent, the player can choose how difficult the game will be for them. The player can personalise their own game experience by deciding whether to go for all the achievements, medals and awards, or merely level and game completion or a combination.

Fig 143. As player's city expands, new challenges emerge such as managing new problems and emergencies e.g. natural disasters increasing overall difficulty level of Sim City 4. Fig 144. Below, The Movies, where the player is free to manage personnel, upkeep and expansion of their lot (left) or the player can take on added challenge of making movies, controlling storyline, scenes, sound and even actor/actress poses (Fig 145).

Of course, an initial problem presents itself when considering difficulty; traditional simulation games do not have levels so how is progressive difficulty possible? What tends to happen is that the player actually controls the difficulty, with difficulty increasing in relation to the game environment.

To explain this concept further, the example of Sim City 4 is used. The player begins building on a very small plot of land initially, for this is all starting funds allow. Assuming the player can create a sustainable city, extra funds will be generated allowing the player to expand and cover more land. In doing so, the player is increasing the area they have to manage and maintain, therefore taking greater responsibility.

In The Movies the player is very much in control of the difficulty as this is very dependent on whether the player is willing to take the time to get to grips with the in-built movie editor which allows players to put together their movie from a huge range of clips and even record voice over's and sound effects or whether they prefer the easier option of hiring script writers to prepare the movies and instead simply manage the personnel and buildings on the lot. Within this there are finer levels of 'player chosen' difficulty such as whether player records specialised voiceovers or simply uses built-in samples.

The ability to play online or to compare lap times with other players can significantly boost the lasting appeal of racing titles. Trackmania United with its extensive online play and ranking features is a great example. When setting up an account, the player chooses locality and country allowing their times, whether gained in online or offline play, to be compared with other players in the same area, country or the world. In addition to scoring bronze, silver, gold or even special "beat the author" medals on each track, the player has a whole new level of difficulty in beating human opponents.

To a limited extent the players own playing style can also influence the games difficulty as the Sonic series in particular was noted for having a number of hidden areas for the player to explore and where extra rings and lives could be found; furthermore bonus rounds also allowed the player to amass extra continues. The game's six chaos emeralds (needed for the best ending) were also entirely optional and added a considerable extra 'difficulty layer' for player pursuing them.

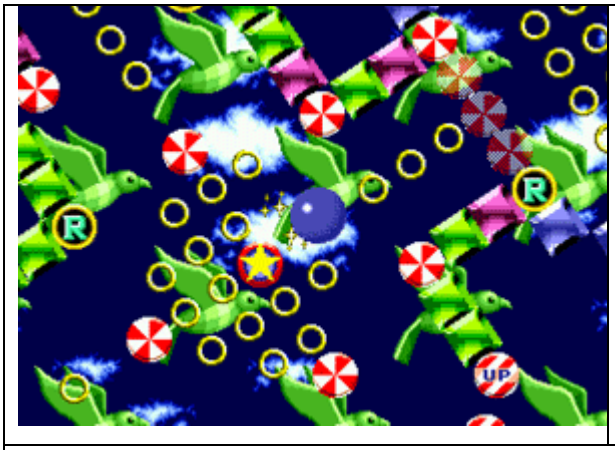


Fig 146. Bonus rounds from Sonic (left) and Sonic 2 Fig 147, (right) gives the player opportunities to amass extra lives and continues. As game saves were not common place at this time such bonuses afforded the player a much better chance of making it through the game.

6.2.3 Adaptive Difficulty Level

Generally modern action and FPS titles, which do not allow the player to select a difficulty level, will employ a variable or 'intelligent' difficulty system where player progress is monitored and if the player is beating game challenges with great ease, difficulty increases in response, but if the player is struggling to progress, difficulty will decrease. However, there is a huge amount of debate around how a game 'knows' a player is struggling or progressing too quickly and indeed how adaptive difficulty levels can be improved to better match the player.

Many modern sports titles offer a career mode where the player starts in the lowest league, unranked, a complete unknown and proves themselves by competing in early events to earn money, gain rank, buy new equipment etc. This progression continues with event difficulty increasing to match its associated rank and rewards on offer. This is a system Virtua Tennis 3 and other sporting titles employ.

Wii Sports employs a slightly different system whereby players are awarded points for their performance with a win gaining points but a loss losing points. When starting a game the console automatically chooses opponents that are of a similar level i.e. they have a similar number of points to the player. Therefore, the players own performance effectively defines the difficulty level with losses reducing it and wins increasing it. The system is reactive to changes in player performance, so if the player has built up a high score but then plays poorly e.g. they haven't played for some time and have forgotten subtleties of the control scheme, then score will decrease. This means the player must consistently play well to maintain a high score. This is a good example of an adaptive difficulty system.

Some modern RPGs like Elder Scrolls IV: Oblivion has enemy levels advance in response to player level. This ensures the player cannot level grind to the extent they can beat the game with ease, a common weakness of RPGs. Although, this is not a perfect solution either as it can result in players feeling they are not progressing despite their levelling up.

Modern platform titles tend to feature advanced adaptive difficulty allowing players who fail to still prosper, if they are trying hard. A good example is Super Mario Galaxy 2 (Nintendo, 2010). If the player fails a single level multiple times in a row, an optional guide leads the player through the entire level. However, as a penalty, the player will only be able to score a passing grade (bronze) for being guided through a level (EDGE, pg 91, 2010).

This kind of system is to be applauded as the game acknowledges the player is trying hard, and reduces the difficulty enough to ensure even novice or unskilled player can enjoy the game and see the worlds on offer. Unfortunately, a game showing this type of 'virtual kindness' is still quite rare but some racing and sports titles also feature similar exceptions to the rules made in the interests of enjoyable gameplay and minimising frustration.

6.2.4 Fixed / Static Difficulty Level

Difficulty selection is not universal as there are many titles that do not allow the player to select difficulty. However, it would still be remiss to assume such games do not have a variable difficulty level, of course they do, it's just the mechanics of the difficulty level are hidden from the player.

Older titles such as Space Invaders, Pacman or Donkey Kong (Nintendo, 1981) may not have any concept of adaptive difficulty level and may simply be pitched at a single unalterable difficulty level. Although even in such games, assuming some kind of level structure, it is highly likely the difficulty of such games would get higher as the player progresses from one level to the next to account for the player's growing familiarity and confidence at using the controls and dealing with obstacles or enemies.

A number of classic platform titles such as Sonic and Mario do not allow the player to select their preferred difficulty level and therefore difficulty progresses in a linear fashion as the player progresses.

As the summary table demonstrates (6.2.5 Difficulty Evaluation) with just 5 out of 10 presence, the traditional (point and click) adventure can be limited in how difficulty is controlled and advances. Indeed, adventure titles rarely feature a difficulty selector, although a few noteworthy examples do, such as the original Monkey Island, where the player chooses between full game and a shortened (easier) version for younger or inexperienced players.

Some adventure games such as Sam and Max: Season 2 (Gametap, 2009) features an innovative built in hint systems where the player chooses the level of hints desired (if at all) at beginning of the game and their companion will provide clues if the player does not progress. Clues vary between subtle and obvious depending on how long the player is stuck and level of hints selected. Whilst not a direct difficulty selector, it is clear, by choosing to use hints or not, the player is having a marked effect upon the games difficulty level (Butts, 2008).

Even in an adventure title without a difficulty or hints option, the concept of progressive game difficulty still exists; as the player progresses through the game, the difficulty and complexity of puzzles encountered is likely to increase to match the player's growing understanding of the games internal logic system. The linear nature of the genre means most adventure titles have a fixed rather than adaptive difficulty system.

Fig 148. An example of a side-kick character in the game world actually forming the game hints / help system. Here in Sam and Max Season 1 (Gametap, 2007) Sam (the dog in a suit) can ask Max (the rabbit) for help at any time simply by initiating a conversation with him.

Some adventure titles offer a layered hints system where each time the player requests a hint, for the same puzzle, more information, or more of the solution is given away until eventually the solution is obvious. Therefore, the player is, in essence, selecting how much help they need to solve the problem and therefore how difficult the game will be to complete. A player determined not to use the hints system would have a far more challenging experience than a player who uses the hints as soon as a puzzle they have difficulty solving emerges.

The missions or scenarios of Rollercoaster Tycoon, which may require the player attains sufficient park rating, visitor count or safety level, are ordered by difficulty with the easiest first in the list. As the player must complete earlier, easier scenarios first, this is a fixed, not player selected difficulty system. Game events can also lead to a natural increase in difficulty as time passes.

This comes across well in theme park management titles, as rides age and inevitably become less reliable making them potentially dangerous to customers, a major threat to a parks safety rating, and when they have broken down they cause the visitors to become annoyed they have to wait for them to be repaired.

Although there are exceptions to this, namely turn-based RPG titles such as Shining Force 2 (Sega, 1994) or Fire Emblem, the majority of RPGs do not allow the player to directly select the difficulty level they wish to play the game at. However in most titles the difficulty logically progresses as the player moves through the game to keep pace with the players advancing skill set.

Whilst adaptive difficulty levels are seen in some RPGs, many titles increase the difficulty in a fixed fashion meaning that ardent players who are prepared to spend hours level 'grinding' in easier; earlier sections may defeat the games difficulty system causing the sense of challenge and achievement to be lost.

6.2.5 Difficulty Evaluation

There are three major methods of controlling the difficulty level of a game:

- A fixed system, difficulty increases progressively on each new mission or level.
- A dynamic, adaptive system; player progression is monitored and difficulty raised or lowered to match player capabilities.
- A 'player-based' system, the player controls how hard the game is by choosing whether or not to take on additional extra tasks or duties the game offers.

Fixed and dynamic difficulty systems are particularly common in the action, platform and fighting genres. Adventure titles mostly rely exclusively on a fixed difficulty system except where hints are available; these give the player some control over difficulty.

The value of adaptive difficulty systems still remains an unknown, in theory they remove unnecessary frustration and allow far wider participation in gaming. Yet, it remains uncertain how such systems can effectively gauge player progress (or lack of) and what constitutes a need to alter the difficulty level. Nevertheless; good examples for developers to take heed of and for players to seek out, do exist such as Super Mario Galaxy 2.

Interestingly the third method of difficulty control, where the difficulty is based on the player's actions is prevalent throughout games. For example, in Railroad Tycoon a monetary bonus may be offered for providing rail connections between one city and another by a certain date. The game will not end if the player ignores this request but taking on the request adds to the tension and gives the player an additional task.

As the summary table below demonstrates, difficulty is a universal common form, it is present over all genres, along with status representation, and it is a core, underlying common form, manifest through games of all styles and times. Modern games feature several layers of difficulty making up their complex structures, meaning the form should show particularly strongly in these games. Indeed, difficulty, will never again be a simple switch or slider, it is a fundamental part of games and the discipline of game design. The pitching of the difficulty level is one of the hardest parts of game development and as forums and books reveal, an incorrectly pitched difficulty level is one of the most common problem players have with games and a commonly cited part of a bad or 'rubbish' game (Newman, 2004).

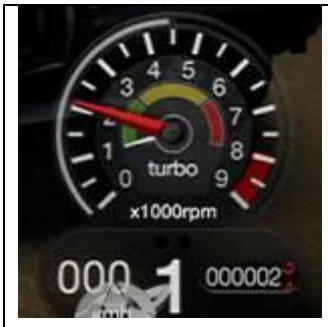
Fig 149. Difficulty

Genre	Level	Details	Examples
Shooter	9	Difficulty level selection and / or adaptive difficulty systems	Far Cry, FEAR, Crysis, Goldeneye
Sports	7	Adaptive/progressive difficulty generally increasing to match player confidence. Usually (partially) player selectable e.g. team played as	Wii Sports, Virtua Tennis 3, FIFA 2006
Puzzle	8	Player selectable, may also progressively increase to match player progress e.g. a levelling up system	Lemmings, Lemmings 2, Columns, Bust-a-Move 4, Tetris
Driving	9	Multiple levels of difficulty; usually the selected track / race mode has an associated difficulty as does the player car and any driving aids selected.	Sega Rally 2, Daytona USA 2001, Ferrari F355 Challenge Colin Mc Rae: DIRT
Strategy	7	User selectable; sometimes dependent upon selected team/side may also be adaptive to player performance	Command and Conquer, Starcraft, Warcraft 3
Simulation	4	Occasionally Selectable and also dependant (to limited extent) on player choices and NPC demands	Sim City 4, The Sims 2, The Movies, Rollercoaster Tycoon, Black and White
Adventure	5	Rarely user selectable but hints are often available; taking these indirectly reduces difficulty.	Broken Sword, Monkey Island, Sam and Max
Role Playing	4	Rarely selectable but commonly increases in a linear fashion as the player progresses although ‘grinding’ can defeat the games difficulty.	Final Fantasy X, Suikoden, Shining Force 2, Dragon Quest VIII, Fire Emblem
Platform	5	Might be selectable and generally increases linearly/progressively as player reaches higher level	Sonic, Blinx, Super Mario, Super Mario Galaxy
Fighting	6	Selectable (sometimes dependent upon fighter chosen) and increments with each bout	Streets of Rage 2, Street Fighter 2, Final Fight, Virtua Fighter 2

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

6.3. Speed

Speed can be identified primarily in the racing genre where it represents speed of the player's vehicle usually via the use of an on screen gauge or a digital readout both generally constant, major features on the HUD.

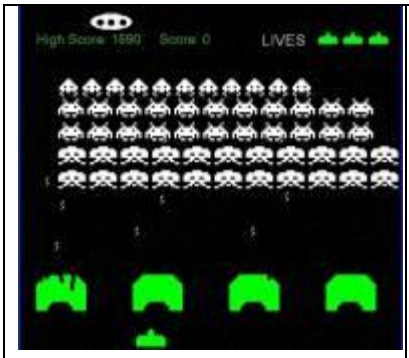
	Fig 150. Digital Speedometer, RPM, milometer and gear indicator from Dirt (Codemasters, 2007). The whole set of gauges are neatly grouped into a small area on the right hand side of the screen so they can be checked in an instant.

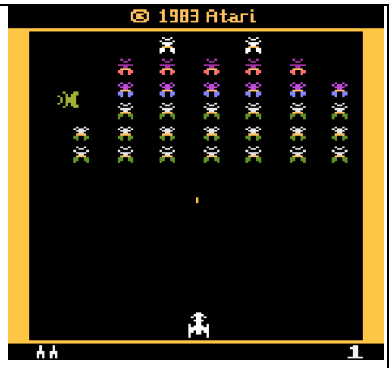
Not all driving titles will necessarily have speedometer, although the players role is a taxi driver in Crazy Taxi there is no speedometer or digital readout and in Grand Theft Auto: San Andreas where most missions require driving, there is no speedometer. It could be argued these titles are off shoots from the racing genre and as directly racing opponents is not a major part, speedometer is less important. In titles without speedometer, speed of the vehicle becomes entirely environmental, the player must themselves judge vehicle speed from the environmental cues and hence brake correctly for corners and hazards.

It may seem speed is redundant outside the driving and racing genre, although this is not necessarily true. Sports and athletics games feature speed readouts for events such as running and in Virtual Tennis 3 the speed of the player's shot is shown in kilometres per hour.

6.3.1 Speed as Difficulty

Speed defines the difficulty of the game experience. The latter is seen most clearly in the case of classic arcade titles such as Space Invaders where invading aliens get faster with each level completed whilst the player's abilities remain constant.





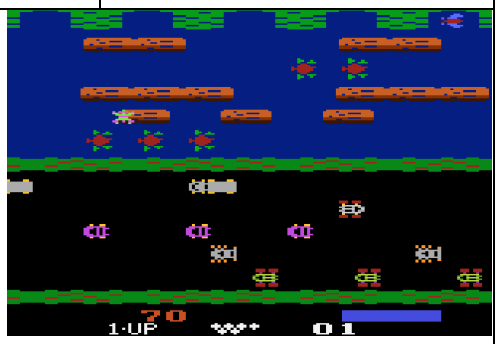


Fig 151. Above left to right: Space Invaders, Frostbite, Galaxian (Atari, 1983). Right: Frogger (Starpath, 1984). Games of this era have similar playing fields on each level but the main difference is an increase in the number and capabilities of the enemies (i.e. faster movement) while the player abilities (generally) do not evolve.

In parallel to classic arcade titles, in puzzle games, particularly of the common block matching variety, speed is generally directly proportional to the difficulty level of game experience and therefore is a vital variable the player will have control over to some extent. In Tetris and games of this ilk the player can set a difficulty level, which defines how fast the blocks will fall, or the blocks may fall faster as the game progresses. Furthermore, the player is also free to move blocks around the environment (left and right) or speed their rate of descent (down).

6.3.2 Time / Speed Manipulation

In Lemmings there is a fast forward option, which allows the player to speed up the game, useful if the player has already solved the levels problem and is just waiting for the lemmings to walk to the exit. There are also controls to alter how quickly the lemmings are released from the entrance i.e. how close together they are, some of the games more demanding puzzles require careful adjustment of this control for the player to succeed.

In these examples, a fundamental linkage between speed and time begins to emerge, in that speed affects the timing of events within the game environment. If, in the example above, the player uses the fast-forward option in Lemmings, all game events occur within a compressed time space and the level is completed faster than it would be otherwise.

Connecting this concept to Juul's (2004) model of time in games, it is noted that by changing the speed, the player is altering the relationship between play time and event time. By selecting a higher game speed, the player is allowing more event time (in game events) to be achieved with the same amount of play time (time spent at the game) i.e. the player is (potentially) able to accomplish more for a given amount of play time.

Fig 152. Original Lemmings, centre: PSP/PS2 remake. Lemming release rate controls.

Action e.g. FPS titles proceed in real time featuring accurate modelling of real life movement portrayed by the main character. Where analogue control is available the movement is controlled from a gentle walk up to running speed. Titles played on PC keyboard and mouse set up might instead feature a run or walk toggle key.

Many newer titles have introduced some basic time control features generally giving the player limited control over speed, effectively allowing the player to enable slow motion, for only a limited time, or else this would weaken the games challenge. Two well known examples; Prince of Persia: The Sands of Time (Ubisoft Montreal, 2003) and Max Payne 2.

Planning, developing and building titles such as Sim City 4 typically offer the freedom to control game speed in a more consistent, direct manner than the FPS. The controls are part of the HUD and typically use the VCR metaphor in their depiction. Controls generally allow the player to pause, play or fast forward the game time, often with incremental levels of fast forward available.

Fig 153. Top Left: the time control panel in The Sims 2 shows the date and time of day, the same controls are offered in Sim City 4 (bottom left) and the game warns the player it is paused by surrounding the play area with a square yellow line and displaying the pause icon. Below: the player affects similar influence over time in Roller Coaster Tycoon (Fig 154) with date and weather displayed in the HUD and Theme Hospital (Fig 155) where date and balance is displayed.

Most platform games allow the player to vary speed of the player character. Modern titles feature analogue controls and so speed of the character can be varied to a finer degree. However, even traditional 2D titles such as Mario and Sonic allow the character to change speed, generally building up to a run and terrain features such as the steep hills, ramps and pipes commonly seen in Sonic titles will also cause character speed to change.

Whilst some RTS titles offer the player control over game speed directly, very much like the simulation genre, it is also possible the player will not have any control over speed and events will occur at the games standard speed. Whilst in the simulation genre, speed controls are common; the same is not true in the RTS genre. The tower defence subset of this genre generally does allow the player to control game speed in the VCR style, an important feature as the 'creeps' (enemy soldiers or units) can be slow moving and initially are only released in small groups. Later on though, the player may feel overwhelmed and hence needs an opportunity to pause for thought.

In sports titles there are two main types of speed the player controls; speed of the player character and the speed/power of the characters shot/kick/stroke/put etc. For example, in Virtua Tennis 3 the player has to run for the ball but also has to shoot the ball back to the opposing player using an appropriate type of shot and ensuring the correct power level, all of which is under the player’s control.

The majority of modern RPG titles allow the player to choose whether their character runs or walks to make covering large areas palatable. A staple of the Final Fantasy series, which has also been adopted by other titles, is to have rideable creatures to speed up player character allowing the map to be explored quickly. The player can (at certain points) elect to ride a Chocobo, whilst in Dragon Quest VIII the player (at specific points) can ride a tiger giving a huge boost in speed. Later in the game the player is given a whistle that can summon the tiger at any part of the world map minimising the frustration of repetitive back tracking.

Some titles of this genre feature teleportation. The Final Fantasy series has dabbled with the phenomenon as have classics like Chrono Trigger and Suikoden. Teleportation is often facilitated by a special object e.g. a mirror the player carries, using it takes the player back to the teleportation system (generally at a base/head quarters) where the player can 'beam' themselves anywhere they have previously visited. An alternative is a teleportation device manifest as a circular beam or circle of coloured light; presumably taking inspiration from science fiction e.g. the holodeck on Star Trek. The player must have visited the place before, usually teleportation points are offered for each town though some titles restrict this to a few major towns. Nevertheless this is an incredibly helpful feature particularly where huge expanses of terrain are offered.

Fig 156. Modern RPG's provide numerous ways for the player to speed their exploration of the game world. Top left: the boat on Zelda: Wind Waker; a common feature of RPGs, used for transport and treasure hunting, right: the horse in Zelda: Twilight Princess, given to the player when they have opened a sizeable proportion of the map. Players further increase their speed by whipping the horse though only for a limited number of times; shown by 'whip' icons. Left, the tiger in Dragon Quest VIII. Right: Chocobo, a well known staple of the Final Fantasy series, pictured in Final Fantasy X.

6.3.3 Speed Evaluation

As with a sizeable number of the common forms identified, the ability for the player to exert control over speed is prevalent throughout all gaming genres. Speed is central to titles of the driving genre where the player is allowed extremely fine control over the speed of their vehicle which is also communicated back to the player via the speedometer. Action (first/third person) and platform titles also provide a reasonably fine degree of control over speed, especially where analogue controls are employed.

As the summary table below demonstrates (Fig 157), speed is less important in traditional adventure (5 out of 10) titles and RTS (4 out of 10) titles where the player is more disconnected from the on-screen action, instead viewing it more like an audience member than a participant. Yet even these seemingly more laid back titles still do allow the player control of speed although in RTS/simulation titles the player is altering the speed of the whole game world rather than just a single (player) character.

Therefore there are two distinct methods of controlling speed:

- Controlling the speed of the player character
- Controlling the speed of the game world

It is also possible for these two methods of control to overlap whereby the player can alter the passage of time in the game world and alter the speed of the player controlled character.

Titles such as Blinx 2 (Artoon, 2004), Max Payne 2 and FEAR allow this. In Blinx the player can slow, rewind, fast forward and pause time or even record a short sequence of play, whilst in Max Payne 2 and FEAR control is limited to slowing down time.

In games like Lemmings or Sim City 4, which allow the player to alter the speed of the game world, rather than just their avatars speed, they are in fact altering the relationship between play time (time spent at the game) and event time (activities and events within the game environment). This means that more or fewer (depending on whether the game is sped up or slowed down) events happen within a particular amount of time at the game. As a knock on effect (in these games), event time will be out of synch with play time e.g. game events will be happening faster (or slower) than time in the real world (Juul, 2004).

Fig 157. Speed (the control of)			
Genre	**Level**	**Details**	**Examples**
Shooter	8	Analogue control or the ability to choose/switch between walk and run	Far Cry, Unreal Tournament 2004, FEAR, Red Steel, Max Payne 2
Sports	8	Ability to influence shot, kick, throw, bowl etc speed and/or avatar speed.	Virtua Tennis 3, Wii Sports, Tiger Woods Golf 2007
Puzzle	6	Ability to control speed of game world or to influence speed of blocks	Lemmings, Bust-a-Move 4, Columns, Puyo Pop Fever
Driving	10	Highly precise control over vehicle speed (analogue) with speed indication	Gran Turismo 4, Project Gotham Racing, GTR, Colin Mc Rae: DIRT
Strategy	4	Ability to increase construction speed by improving base facilities, some titles offer limited control over game speed.	Command and Conquer: Red Alert, Warcraft 3, Starcraft, Age of Empires 2
Simulation	10	Ability to control the passage of time and effect limited control over avatars.	Black and White, Sim City 4, The Sims 2, RCT, Theme Hospital
Adventure	5	Ability to speed character movement through scene or skip walk animations in changing/exiting location	Broken Sword, Monkey Island, Sam and Max, Discworld, Prince of Persia, Tomb Raider
Role Playing	8	Basic control of avatar speed usually a run button for increasing character speed or rideable creatures.	Final Fantasy X, Dragons Quest VIII, Breath of Fire 3, Suikoden
Platform	7	Analogue or digital control over game character, environment may also facilitate speeding or slowing of avatar (inclines/declines/loops/corkscrews etc)	Sonic, Super Mario, Super Mario Galaxy, Blinx
Fighting	5	Side scrolling titles generally offer a run function which can also enable new moves. Avatar speed generally increases when performing a special attack	Street Fighter 2, Streets of Rage 2, Final Fight, Dead or Alive 3, Virtua Fighter 2

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

6.4. Colour

The use of colour is highly prevalent throughout a number of titles of varying genre. Just some of the uses of colour observed include:

- health (status)
- car (status)
- race position
- time left
- enemy / hostile (teams)
- enemy sight
- attack / move

6.4.1 A Colour System

In the case of health and status representation it is possible to note the use of ‘colour systems’ at work, a specific set of colours used commonly throughout videogames. A colour system which quickly emerged for representation of status, most commonly health level but also: power, armour, time available, damage and more was that of red, yellow and green. In this colour system green is a safe state, red a danger state and yellow (and sometimes orange) represents a middle ground between the two. This simple three tone colour system is featured extensively throughout many games over most major genres.

It is not difficult to see how this colour system has emerged; indeed, it closely follows many real life systems such as traffic lights. Furthermore, red is widely understood as a danger condition within society and everyday life is filled with examples of this such as the red traffic light signalling stop. Many titles also rely on the principle of colour intensity as a representation of the danger faced where as cold colours such as purple, blue and green represent a safe state, danger increases along with colour intensity through warm yellows and oranges to the 'hot' red danger state.

The use of this colour system is not limited to the HUD either, it is prevalent within the game environment where it is used for identification of rival teams in multiplayer games, determining enemy’s line of sight, identifying enemy weak spots, determining areas in which scenery can be interacted with e.g. 'red' exploding barrels etc.

6.4.2 HUD Colour

RTS games use a visual representation of the cross hair for instructing troops to attack as seen in the classic Command and Conquer series where red cross hairs flash when the mouse is positioned over buildings or enemies that can be attacked and green cross hairs flash when a (non attacking) movement command is issued.

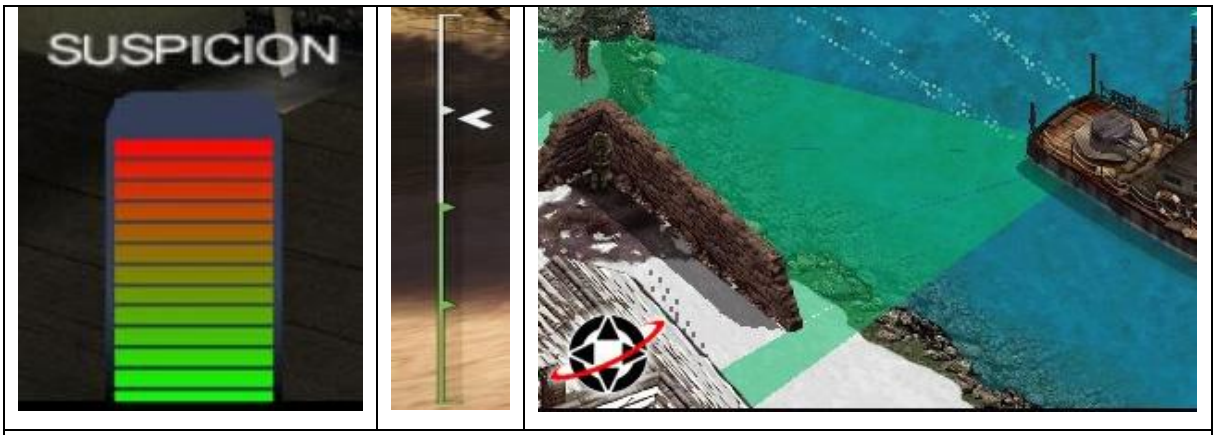


Fig158. Above: Left, use of the three tone colour system in Fahrenheit's suspicion meter, centre; Dirt's stage progress meter and right; Commandos enemy sight 'beam' which displays in green unless the player is caught in the sight, then it changes to red.

In the classic overhead RTS title Commandos, the player can see the enemy's line of sight extending from the enemy like a torch beam and realistically follows enemy movement and turns to give an accurate idea of their view. The beam is initially green but if the player is sighted it immediately turns red to indicate danger state. The beam is not static and can move slowly or swing round suddenly (i.e. if the enemy makes a sudden turn) at any time making for a tense and challenging game experience.

The consistent use of colour, or a colour system for status, whether of time left, player energy, race position, car condition etc demonstrates that use of colour for the denotation of status could be seen as a common form of expression despite being a major part of some of the previous forms identified such as the concept of status / health representation.

	Fig 159. Cross hair in Resident Evil: Umbrella Chronicles (Capcom, 2007) is particularly original, on the outside available ammunition is displayed; starting green, changing to yellow and red as ammo decreases showing at a glance how much ammunition remains.

In Vampire the Masquerade, stealth is denoted by a percentage showing likelihood the player will be spotted by enemies. The percentage initially displays in green but if the player is in danger of being spotted, percentage goes orange and if the player is in enemy sights (hence will imminently be spotted) it turns red.

Simulation titles use colour to denote status and prosperity. In The Sims 2 status bars represent needs and wants of each person.

	Fig 160. A glowing diamond depicts status of a selected sim (person) in The Sims 2. Shown in optimal green state, the diamond changes through green, yellow, orange and red denoting decreasing satisfaction, happiness and well being. A visual averaging of the need bars for at-a-glance indication of status.

Likewise, Black and White features coloured status panels for the status of a player's creature using the classic three tone system. The Sim City series and Caesar 3 make use of overlays displayed on top of the usual HUD map. These overlays present various statistics such as crime/pollution levels, power and water supply status. The areas of the map where, for example, pollution is low would display in green or blue with colour intensity rising for the seriousness of the pollution. Such conventions would be used to chart other items too.

As the summary table (6.4.6 Colour Evaluation) demonstrates, the common form has only moderate presence in sports titles, which, often use a three tone colour system to reinforce the concept of the power bar used for judging the power of the players shot. However instead of referring to dangers, the colours instead simply refer to shot power with the higher intensity (red) representing the strongest shot. This provides reinforcement to the existing power bar or gauge.

Fig 161. The power meter in Wii Sports Golf always displays in blue unless the player shot power goes beyond the bounds of the meter then it turns red. If the ball gets stuck in rough ground the maximum power is restricted to half or quarter of the full meter making powerful accurate shots harder.

RPG titles frequently use bars to represent player energy and mana or magic levels and to display information relating to a whole host of characteristics for each member of the players party such as strength, defence, evasion, luck etc. Whilst some titles use single colour bars, many titles have adopted a colour system to reinforce the level the bars are at. This is important for health, special power and magic bars, these are most crucial to the player's success or failure in battle. Special power bars are prevalent amongst titles of this genre, often very prominently displayed on screen; usually charging up over the battle, allowing the player to release a devastating attack when full.

In (most) RPGs the earliest, easiest, enemy the player will face is a small blob of slime. Slime blobs have very limited attacks and even in a group rarely pose a threat. Slime blobs can be of different colours; the easiest is traditionally blue but other colours are used to denote stronger instances of the same enemy. This technique is also used on other types of enemy and it can be noted that encountering an enemy in different colours (to their normal appearance) generally relates to that instance of the enemy having greater or (rarely) less capability than standard enemy.

Fighting games of all types rely on energy bars for portraying status and many titles make use of a colour system to reinforce this even if it is simply to show energy as green and the depleted energy as red. Furthermore, scrolling beat-em-ups like Streets of Rage feature bosses with multi-colour energy bars. The enemy has multiple full energy bars and as the player character damages the enemy the energy bar depletes as normal and when fully depleted changes to a different colour. These may start off blue and each successive energy bar the boss has is a more intense colour denoting the decreased energy level. In essence, it could be considered similar to a discrete lives system as the multiple energy bars would actually be the equivalent of a number of the player character's lives.

Fig 162. In Streets of Rage 2, the player characters (Axel and Blaze) are fighting two bosses. Enemy energy bars normally display in yellow like the players however, because bosses have multiple lives their 'extra' energy bars display in different colours becoming more intense as they weaken. The stars above the bosses tell the player at a glance how many lives (full energy bars) they have before they will be defeated.

6.4.3 Character Colour

Furthermore, colour is also used on major enemies such as end of level bosses to denote weak areas where it is possible to damage the boss. Commonly seen in platform titles where such areas are shown in red to draw attention to that area. Like the FPS genre, colour represents changing of states to a safe state or to a danger state.

Fig 163. In Sonic 2 when Sonic has lost all his rings (collectables) the rings counter changes from yellow to red to denote a danger state i.e. the player character will be killed if damaged again.

Sonic titles also have the concept of ‘super sonic’ state where sonic changes from blue to yellow and is given super levels of strength (invincibility) and speed. Again colour change is used to denote the increased powers.

In Rainbow Islands (Taito, 1986) if the player remains in one place too long or an enemy trapped in a rainbow escapes it turns red, and pursues the player quickly. Therefore, the red informs the player of imminent danger state of the enemy’s sudden increase in power. In the same title, bosses have large energy bars that use the three tone colour system.

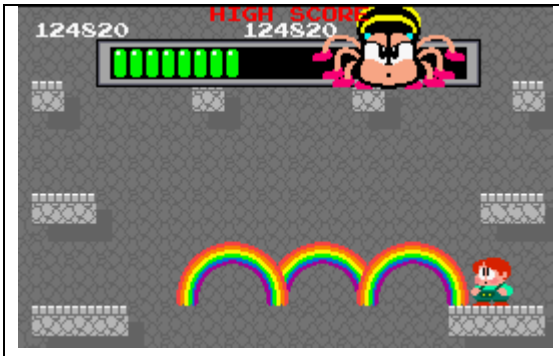


Fig 164. Rainbow Islands, above left and right shows the classic three tone colour system used on boss enemy energy bars. Fig 165. Below left and right shows how enemies left undefeated turn red signifying increased threat posed through them becoming faster.

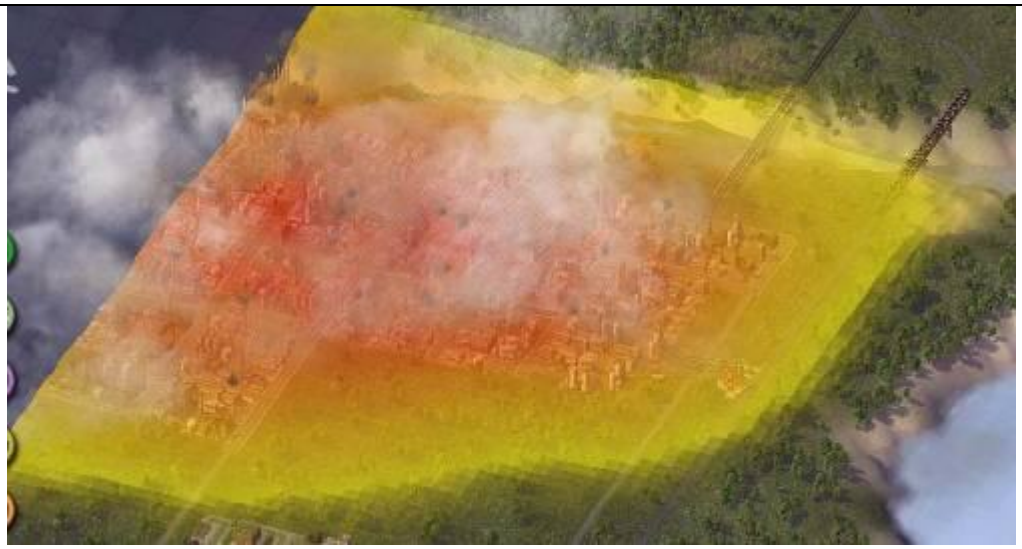
In Pikmin, the pikmin the player character controls can be of three possible colours: red, yellow or blue. The colour of the pikmin denotes their capabilities for example blue pikmin can swim, i.e. they can bypass any water based obstacles, red pikmin are strong; good fighters and carriers whilst yellow pikmin are resistant to fire. Here a slightly different use of colour is observed; the colour refers to the pikmin's abilities where blue is commonly associated with water hence the blue pikmin can swim, a burning flame could be likened to the yellow hence yellow pikmin can resist fire.

Furthermore, the red (danger) state represents strength and power hence the red pikmin are very strong, a real danger to the enemies they encounter.

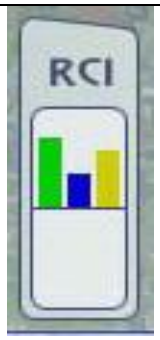
Fig 166. The colour of the pikmin denotes their capabilities. Also note the flower on their heads (showing age); this shows they are fully grown; younger pikmin have a bud or leaf.

6.4.4 The Immediacy of Colour

The immediacy of colour over traditional textual representation e.g. displaying the information on a graph or report makes it an obvious choice for getting across vital information quickly. Furthermore, detail need not be sacrificed as the subtle colour shades allow complex information to be displayed hence communicating the problems for the player to solve but also the severity of the problems. Such overlays can also usually be displayed directly over the game environment too allowing the player to pinpoint exactly which buildings are major pollutants for example.



Images: Sim City 4. Below (Fig 167) options to control information displayed on game environment map, above the overlay display. Colours denote severity of the air pollution. Outlying areas, pale yellow have little pollution whilst inner city pollution is severe (red). Right (Fig 168): The simple bar graph displays on the HUD showing demand for Residential, Commercial and Industrial plots of land; above the line indicates demand, below decline or recession. Colour used again here for immediacy, green is residential, blue is commercial, yellow industrial, matching the colour these plots display as in the environment. Plus the mini-map on the HUD (Fig 169) also uses the same conventions further reinforcing the games chosen colour system.



In Crazy Taxi, the on screen timer changes in colour from yellow to red when the player is about to run out of time (ten seconds remaining). In a similar manner in Colin Mc Rae 04 during a rally the stage times are recorded and if the player has the leading time for a stage, the block representing that stage shows in green and if not it shows red.

Fig 170 (Left): Colin Mc Rae Rally 2005 and right (Fig 171): Daytona 2001 (Amusement Vision, 2001) demonstrates a classic use of colour in racing games, the race start lights changing colour to signal the start of the race.

The Colin Mc Rae Rally titles provide a particularly rich set of examples of colour being used to warn and inform the player. Colour is used to signify race start and damage on the car and represents severity of upcoming corners using the traditional three shade scale.

Fig 172. Left: all images Colin Mc Rae Rally 2005. The images show increasing severity of curve, shown by line drawing, but where split second reactions are required colour communicates to the player with much greater immediacy. The icons appear prominently at top centre of the screen, as the corner approaches and stated by the co-driver providing a three-way reinforcement of the hazard (corner). An interesting parallel with traffic lights and driving procedure; green go, amber caution and red stop. Whilst the player would never be expected to stop in the rally the red curves will require significant braking compared to the green curves which, depending on road surface, may be taken at full speed.

6.4.5 Colour in the Environment

Many major puzzle games such as Tetris, Bust-a-Move, Columns and Puyo Pop Fever (Sega, 2005) do make use of colour. Indeed, matching blocks of the same colour is part of many major puzzle titles. However, observing common colour systems is difficult.

Fig 173. Above: top left: Columns, right: Bust-a-Move 4, bottom left: Tetris, right: Puyo Pop Fever all demonstrate the primacy of colour as a universal in block matching games, all these titles and many more hinge on this simple concept. Note the choice of colour; all titles tend to use bright primary colours that are easily distinguishable and contrast strongly against each other to allow the player to quickly chain blocks together.

Audiosurf (Valve, 2008) blends puzzle and racing genres to create a new kind of game where the game world is generated by the digital music track the player chooses. The player chooses a (futuristic) craft to pilot and must collect coloured blocks as they drive along the track. Some blocks must be avoided and collecting too many blocks in a single column causes them to overflow preventing further blocks from being collected for a while. Elevation of the track, speed of the players craft and colour intensity of the track and blocks is controlled by volume and intensity of the audio of the selected music track. The title uses an extended version of the three tone system with cold colours such as purples and blues denoting slow sections (quieter) and bright or intense colours such as yellow, orange and red denoting fast (louder) sections.

Fig 174. Images from Audiosurf where futuristic race tracks can be created from any mp3, wav, wma audio file on the user's computer or over a network. Inclines and declines in the race course come entirely from tonal makeup of the music. Bottom left: the game demonstrates its homage to Tetris and other block-matching titles. Blocks must be matched; three or more of the same colour, but no lane should be over filled and different coloured blocks have different values associated with them.

Traditional (point and click) adventure titles do not feature clearly observable colour systems. This could be apportioned to the more sedate pacing and nature of these titles and the rarity of dangers to warn the player about.

As the summary table shows (6.4.6 Colour Evaluation), with only 3 out of 10 presence, the adventure genre makes only limited use of colour with no clearly discernable colour systems identified. Whilst optimistic to state adventure games employ a specific colour system, there are some specific ways adventure titles use colour to aid player progress. It is quite common in point-and-click adventure titles and action adventures such as Tomb Raider (Eidos, 1996) for interactive areas of the environment to stand out in some way.

The most obvious example of this is a huge stone wall with bricks all of uniform shade except for a small area where the hue is slightly different. These techniques generally denote the portion of the wall the player can interact with. This limits realism but is considered necessary to avoid the frustration of trying the same object repeatedly in different places.

Items which can be collected may be highlighted in some way e.g. they may be of a different colour shade to surrounding items or may glint or shine to denote their collectable status. Even if a title uses none of these highlighting methods it is highly likely, at the very least, the mouse pointer will change when moved over an item to show when interaction is possible.

6.4.6 Colour Evaluation

The most prominent colour system is the three tone (green, yellow and red) used primarily for representation of player character health and for a surprisingly wide range of other applications such as warning player of enemy interception, of running out of time, of the power of their shot, identifying enemy weak spots and much more.

This major colour system and other similar colour systems is hugely prevalent across different games, the colours providing a level of immediacy even a realistic icon cannot match. It is of no doubt the three tone colour system relies heavily on society's understanding of the colours, of red as a danger or warning and green as a safe, positive condition.

Yet the sports genre provides an interesting diversion with the power meter, with low power shots typically being represented with a 'safe' colour like green and blue and a high power shot being shown as red though this could be attributed to the 'danger' here coming from the unpredictability associated with a particularly high powered shot.

As the summary table below shows, with only 3 out of 10 presence, adventure seems the only genre not using coherent colour systems. It is uncertain exactly why this is the case although some possible reasons for this are:

- Adventure titles rarely put the player in any serious danger and hence a clear warning system is less important.
- Adventure titles rarely need to be completed within exacting time limits.
- Adventure titles do not have any concept of player energy beyond the player being alive (game in play) or dead (game failed).

Nevertheless, adventure games make use of colour to highlight interaction spots and further investigation may allow unique colour conventions relating to their highlighting techniques to emerge.

Fig 175. Colour (Systems)			
Genre	**Level**	**Details**	**Examples**
Shooter	9	The three tone system (green, orange, red) is commonly used for health representation complemented by numerical representation	Far Cry, Unreal Tournament 2004, Counter Strike, Call of Duty, Serious Sam 2
Sports	5	The traditional three tone system may be used to reinforce the power gauge with red generally denoting high (over power) shot.	Wii Sports, Virtua Tennis 3, Tiger Woods Golf 2007
Puzzle	6	Colour matching is pivotal to the gameplay in many titles although colour systems unclear	Tetris, Bust-a-Move 4, Columns, Audiosurf
Driving	7	Commonly used to represent the status of parts of the car; tyres, engine, electrics, brakes, gears, etc and race start and lap/section time	Gran Turismo 4, Colin Mc Rae 04, Forza Motorsport, Daytona USA 2001, Crazy Taxi
Strategy	7	Health and building state representation, can represent more too e.g. power provision for base, unit/troop skills etc	Command and Conquer, Age of Empires 2, Starcraft, Warcraft 3, Pikmin
Simulation	8	Population happiness/satisfaction, need/desires, land zoning, pollution, crime, education etc	Sim City 4, The Sims 2, Caesar 3, RCT, Black and White
Adventure	3	Use of colour limited to denoting pickups and areas where interaction is possible.	Broken Sword, Monkey Island, Tomb Raider, Sam and Max
Role Playing	6	Character energy, mana / magic. Also experience and skill/attack development levels	Final Fantasy X, Dragon Quest VIII
Platform	7	Character energy, collectibles count, enemy/boss weak spots, enemy strength, danger conditions	Sonic, Blinx, Super Mario, Super Mario Galaxy, Rainbow Islands
Fighting	8	Combatant energy bars	Street Fighter 2, Virtua Fighter 2

Key to Table	
Genre	Type of game common form is being evaluated in
Level	Strength of presence common form holds in that genre (10 is highest, 0 weakest / nonexistent)
Details	Some typical examples of the common form in use in this genre.
Examples	Examples of games which have this common form (more can be seen in the chapter text)

7. Common Forms Identified

The preceding chapters (5 and 6) presented an in-depth discussion of eight major common forms, four relating to player status (chapter 5) and four to game status (chapter 6). These chapters detail how each common form is explained and validated with numerous examples of its use and manifestations of its presence given. Each common form emerged within the context of a genre and then its appearance was tested for across the ten mainstream gaming genres. The complete common forms report (accessible on the CD-ROM) details the entire study as each of the total twenty-six common forms was discovered. This led to the current chapter where common forms which hold some cross genre applicability are categorised and itemised.

Therefore, this chapter presents the final results of the main investigation where the common forms discovered are listed according to their level of cross-genre penetration.

7.1. Complete Common Form Listing

The listing below presents all twenty six common forms of expression that have been tested thoroughly in the study for application across a number of gaming genres. The bulleted sub headings serve to summarise the main manifestations of the common form identified, giving examples of how a typical game might represent each common form. Whilst these common forms can each be discovered in games across more than one genre, only some of these are relevant to games in all genres. This will be discussed further later in this chapter.

1. Energy / Status Indication
    - status of player
    - status of NPCs / population
    - status of car
    - status of buildings
2. Status Icons
    - Coloured Cross (Health)
    - Shield (Armour)
    - Gun (Weapons / Firing)
3. Navigational Guides / Aids

- HUD Radar for enemy identification
- HUD Radar for enemy detection
- HUD Map for navigation
- Interface map for optimal route planning

4. Player and Character Icon / Portrait
    - Icon for health / status representation
    - Portrait for conversation / empathy
    - Portrait for character selection
5. Player Companions / Team Mates
    - Player as member of team / squad
    - Companion to provide support / guidance
    - Companion for cooperative multiplayer
    - Companion as advisor
6. Cross Hairs / Mouse Pointer
    - accuracy of weapon
    - command issuing
    - item collection
    - interaction
    - conversation initialisation
7. Timer
    - Mission time
    - Race time
        i. Lap time
        ii. Stage time
        iii. Time left
        iv. Time taken
8. Colour
    - health (status)
    - car (status)
    - race position
    - time left
    - enemy / hostile (teams)
    - enemy field of view

- attack / move

9. Size
    - Size as representation of power
        i. Power of player character
        ii. Power of enemy
        iii. Power of bosses
        iv. Effect of weaponry / power up
    - Size as representation of capability
    - Size as representation of danger level (i.e. standard enemies small, boss large)
10. Physical Representation of Player Character
    - Partial / Complete
    - Realistic / Outline
    - User Configurable / Fixed
    - 2D or 3D
    - Participant or Observer / Controller (Deity)
11. Speed
    - speed of the game as difficulty (space invaders)
    - speed of blocks falling in Tetris etc
    - speed of the car, projectile, athlete
    - speed of player character
12. Difficulty
    - Player selectable (entire game)
    - Player selectable (game level)
    - Adaptive to player progression
    - Increases progressively through mission / level progress
13. Conversational Choices
    - Presence of in game conversation
    - Ability to converse with other characters on demand
    - Conversation choices (branching conversations)
    - Ability to affect plot / storyline changes
14. Resources and Currency System
    - The monitoring of one or more resource types

- The monitoring of a realistic or abstract currency system
- The ability for the player to earn and accumulate wealth
- The ability for player to spend/invest/use wealth earned

15. Level, Stage or Mission Selection
    - Ability for player to exert control over level choice
    - Ability for player to freely explore game world
    - Ability for player to freely complete objectives (choose order)
16. Character Customisation / Development
    - Creation of a new character
    - Modification of existing character/s
    - Customisation of character aesthetics (skin colour, tone, facial features)
    - Customisation of character details (age, gender, name, sign etc)
17. Loading and Saving of Game Data
    - Profile Creation
    - Quick Save and Load
    - Level Checkpoints
    - Between Level Saving
18. Piloting of Craft and Vehicles
    - Partaking in races (car/motorbike)
    - To allow access to new areas (all terrain vehicle, ship, plane etc)
    - To improve offensive / defensive ability (Tank, Gun Turret etc)
19. The Presence of a Career or Story Mode
    - Accurate representation of a real career path (movie director, mayor, police officer, racing driver, tennis professional etc)
    - Representation of a nefarious or abstract career path (assassin, warrior, hit man, computer hacker)
    - The following of a career path as part of a story or pre-determined plot
20. Inter-Level Hub (Bridge or Break)
    - Small environment linking together game levels
    - Provision of facilities (save/load, statistics, story, power ups)
    - A number of inter-connected hubs may be provided themed around the specific levels offered (e.g. ice, lava, jungle, desert etc)
21. Unique Character Special Power

- Ability, skill or power which only one character can perform
- May be enabled by a special item, weapon or accessory

22. Monitoring of Player Score
    - Display of score
    - High score tables (arcade heritage)
    - Online results boards (score as 'frags')
    - As a means of progression (level unlocks)
23. Inventory
    - Position
        i. In Game HUD
        ii. Out Game Interface (e.g. Pause Menu)
    - Sort/Organisation Facilities
    - Item Depiction
        i. Iconic
        ii. Textual
24. Items
    - Type
        i. Medicinal / Healing
        ii. Strength Boosters
    - Uses
        i. Solve Game Puzzles
        ii. Heal Injured Characters
        iii. Eliminate Enemies
25. Power Ups
    - Often limited time of effect
    - Increases one or more statistics
    - May also / instead increase health and/or armour
    - Within the game environment but hard to find
26. Non Player Characters
    - Enemies
    - Bosses/Guardians
    - Civilians / Neutral

7.2 Universal Common Forms

From this detailed investigation out of the twenty six common forms discovered sixteen have been proven to have applicability across the ten mainstream gaming genres tested in this study (see 1.6 for listing and justification of genres). To see how presence of these common forms varies when they are tested with games outside of mainstream gaming genres please see Chapter 10: Testing. The universal common forms discovered are:

1. Energy / Status Indication
2. Player Status Indication (Icons)
3. Player Character Icon / Portrait
4. Player Companions / Team Mates
5. Timer
6. Colour (Colour Systems)
7. Physical Representation of Player Character
8. Speed (the control of)
9. Difficulty
10. Level, Stage or Mission Selection
11. Character Customisation and Development
12. Loading and Saving of Game Data
13. The Presence of a Career or Story Mode
14. Character Specific Special Power
15. Items
16. Non Player Characters

Player status indication includes HUD based health bars and environmental health systems. Initially, it might be assumed such indicators are limited to the FPS and action genres but, this is not the case. Instead, most genres feature either environmental, HUD based health indication or both. Likewise, icons relating to player status are universal regardless of whether this relates to identifiable (human) character, vehicle or mechanical object, or to the strength of a company of soldiers or even the prosperity of a city or theme park.

The player and major characters often have an additional (iconic) representation to their actual on screen presence. Whilst a feature grounded in the role playing genre, the use of icons or portraits extends through genres. So too does the concept of player being backed up; be this by a single companion or an entire squadron of soldiers. Shooting and strategy titles tend to favour the concept of the player being part of a large team, whilst titles of the platform and adventure genres tend to favour the ‘cosy’ concept of a duo against the world; or at least the games puzzles and problems.

It is unsurprising many of the games available are timed or at least have timed sections, indeed for many action and even strategy titles this provides a major component of their challenge, whilst in adventure and simulation titles it is of secondary importance. Colour is a more general common form that has extremely wide ranging application. It might be seen broadly as a container common form that may hold several other forms. It serves several purposes e.g. status, health and time representation. One might extend this to state that colour underpins almost all of a games visual communication system.

Whilst considering colour to be a common form may initially seem overly general, within the category of colour, it is possible to observe use of specific colour systems to communicate information to the player. Health is the most obvious use, with the most common three colour 'traffic light' system (green, yellow, and red). The study has shown the uses of this colour system are wide ranging and encompass multiple different genres.

The representation of an identifiable player character may appear an obvious common form yet there are so many possible types of representation it is interesting to consider how they impact the game experience. Indeed outside of action, adventure and driving titles it becomes somewhat unclear of whom the player actually is; can the player be considered as the commando in Command and Conquer: Red Alert (Westwood, 1997) or is the player instead the armchair general giving the orders? The study assumes the player is overseer, a view these titles seem to encourage; simulation titles are often referred to as 'God Games' after all.

In this context one notes the 'disconnected' or overseer genres such as strategy and simulation have very different common form usage patterns to the direct control action genres such as driving and FPS. Primarily it seems forms related to character relationship and item collection such as character development and non-player character and inventory fail to hold significant presence in strategy or simulation games. This is because the player's overhead view and indirect control prohibits the more 'human' qualities of direct control and physically (within the virtual environment) meeting and conversing with characters action-orientated games allow.

Speed as a common form emerged from the driving genre where it is undoubtedly of primary importance, yet prevalent in action titles and even spans strategy and simulation titles, traditionally considered the more laid back genres. Difficulty is, of course, prevalent throughout, yet some genres seem to have weaker difficulty controls. Some titles of the role playing and simulation genres, in particular, have difficulty systems dedicated or veteran players can defeat either intentionally or by accident. This can be done by overzealous level grinding in RPGs or simply by creating a basic city and functioning economy in Sim City 2000, and leaving the game to generate revenue while the player is away.

All titles feature concepts of level selection, this is a vital part of game design. Nevertheless it is highly beneficial to consider the hugely different approaches different types of games take to this and considering the effects this has on player experience.

Modern technology makes save systems universal, though whilst technology allows progress to be saved to the exact instant the player has reached, some titles still hold back some convenience to maintain the games challenge but possibly at the cost of frustration. The best example is the Resident Evil Series (Capcom) much derided 'typewriter' save system, although role playing titles also tend to place some limits on player saving. A positive use of the technology, in recent years, has seen the player able to do much more than just save position. Players can now record music, make short movies, develop city and theme park roller coaster plans and even full game levels and maps, all of which can be stored and shared online with like minded people.

Likewise, it was interesting to note character customisation and development and character specific special powers held universal presence, as these are traits one might traditionally associate exclusively to the role playing genre. However, games increasingly borrowing content from other genres means that this is no longer the case. Furthermore, a career or story mode also may seem to be a role playing, strategy or simulation trait yet it applies, admittedly to varying degrees, across all gaming genres.

Items are common throughout genres. However, the type of items a player is allowed to collect and possible uses an item may have varies greatly between genres. For example, in an adventure game, no limit is placed on type of items a player collects, yet many of these items are only used in one place, at one time. By comparison, a first person title might allow the player to collect only weapons and armour based items, but the player can use these items at any time and over a wide variety of situations. Even a weapon often does not have to be fired, many titles allow the player to swing the weapon to perform a melee attack, useful if a player has run out of ammunition or a mission objective requires subduing rather than killing the enemy.

A concept emerges with relation to items, the study shows that genres which allow collection of a very wide range of items tend to have a high proportion of single use items and the potential for item based interaction is somewhat limited. This can be seen quite clearly in the adventure genre. Meanwhile, genres where the types of item a player can carry are quite constrained, namely the FPS genre tend to allow the player greater freedom to use and organise items within the limitations of the game mechanics.

However, even within these common forms, the extent a genre depends on presence of a common form varies greatly from genre to genre. Within each of the sixteen common forms with proven universal application, there were genres where, whilst present to an extent, the common form was not always vital to the success of titles of that genre. Such exceptions have been noted and could provide starting points for further investigation.

7.3 Non-Universal Common Forms

There were ten common forms which did not hold applicability across all genres:

1. Navigational Guides / Aids
2. Cross Hairs
3. Size (as power indication)
4. Conversation and Dialogue
5. Resources and Currency System
6. Piloting of Craft and Vehicles
7. Inter-level Hub
8. Monitoring of Player Score
9. Inventory
10. Power Ups

The piloting of craft and vehicles common form has been proven to be weak, failing to feature in three genres: sports, puzzle and fighting. Navigational guides, cross hairs, conversation and dialogue, piloting of craft and vehicles and inter-level hub did not feature within the fighting genre. This is not to say that no fighting games could have these forms, merely that they could not be observed in the sample tested. Meanwhile, size was not present within the sports genre and resources and currency, craft and vehicles and inter-level hub was not present in puzzle genre and the monitoring of score could not be observed in the role playing genre.

However, apart from these exceptions it is still believed these are strong common forms and that they do have wide ranging applicability, for each of the common forms there was only one genre that did not feature the common form.

However, it seems some examples of fairly weak common forms have emerged, notably the power ups common form was not present in the sports, simulation or adventure genres and the inventory which is not present within puzzle, strategy, simulation or fighting games.

It is not difficult to understand why navigational guides do not feature in the traditional gameplay of fighting titles, after all play is restricted to a ring, or a very enclosed environment. There is no world to explore and hence no requirement for a radar or map, more commonly seen in shooting, strategy and simulation titles. Likewise, focus on fist-based hand to hand combat in fighting titles means little need for a targeting system.

The size as power indication common form varies depending on realism of the title, realistic titles being bound to the same laws and restrictions present within the real world, whilst more abstract or fictional titles present their developers with a much larger level of artistic license. As sports titles are based on real world sports, they largely provide an accurate and authentic simulation, featuring realistically modelled human characters and hence, power depends far more upon player skill than size of the character or accessories.

The following chapter discusses the discovery and testing of genre-specific common forms. This was the initial, 'data gathering' portion of the study, in which, the maximum possible number of common forms were recorded according to genre to give an initial data sample. This is then reduced through a process of abstraction with relationship modelling.

8. Genre Specific Common Forms

8.1 Methodology

Chapter five (Player Status Common Forms) and six (Game Status Common Forms) provided evaluated eight major common forms. Meanwhile this chapter summarises the early, initial, work that led to chapters five and six and the completed classification of common forms in the previous chapter (7: Common Forms Identified).

In this chapter, each section begins with a listing of all common forms identified within the gaming genre in the first part, whilst the second part discusses the relationships between the forms identified and the abstraction process followed throughout the study.

The common forms study began by attempting to identify the maximum number of shared elements (common forms) possible within each gaming genre. This could be seen as the process of gathering the maximum number of candidate common forms possible in order to give the widest range of data to use in the second phase of this study. This second phase is where the body of forms gathered are then evaluated in terms of their appropriateness and utility to this study and then some reasoned judgements are made about which common forms are likely to have greatest potential for future cross genre application later in the study. This is the work that the abstraction process does upon the initial body of common forms gathered. This is the subject of this chapter.

The set of gaming genres this study uses is based on works of major academics in this field and includes:

1. First Person Shooter
2. Driving
3. Adventure
4. Platform
5. Real Time Strategy
6. Simulation
7. Role Playing
8. Puzzle
9. Sports
10. Fighting

For additional justification of the gaming genres, and the standards and protocols used throughout the study please see chapter one (1.6: Methods and Protocol). A basic key, and explanation of the notation used in the common form relationship diagrams used throughout this chapter is given below, for more information please see Appendix C: Key for Common Form Mapping Diagrams.

On the relationship diagrams, boxes represent major and minor common forms. The box holds the name of the common form. Lines are drawn between common forms showing relationships. There are two distinct types of relationship, which are:

- Black lines represent relationships between a major common form and associated minor common forms that come directly from it. These are considered internal relations. These relationships show the connection between the genre and its associated common forms. For example, a weapon is fundamental in the FPS genre. When used with common form relationships they tend to demonstrate an inheritance from one common form to another. For example, health, armour and weapon power-ups are all types of power-up, they can all be generalised as power-ups. Arrows on the black lines demonstrate the direction of inheritance i.e. which common form is absorbed into another, the transfer of information and properties.
- Blue lines represent external relationships, that is either relationships between minor common forms or relationships between different major and minor common forms. These typically connect common forms to one another through their related functions within the game environment or on-screen HUD. For example, in the FPS genre, ammunition is typically found in crates, which also can hold weapons as well as various power-ups for health and armour. Blue lines typically demonstrate relationships but do not feature inheritance unlike the black lines. They also demonstrate optional relationships that may or may not be true depending upon the game e.g. levels in platform games may have hidden bonus levels but also may not.

Colour in these diagrams refers to the hierarchy the form holds within the overall model:

- Major common forms have an orange background as do universal common forms in the genre specific investigation (widest ranging, present over most games)
- On the genre specific common forms a pale orange/tan colour refers to the genre of identification and common forms (next level) which do not hold universal presence across genres.

- Validated minor common forms have a yellow background and they are common forms that hold applicability over all gaming genres.
- Non-validated minor common forms have a green background and they are common forms which exist over more than one gaming genre but not all genres.

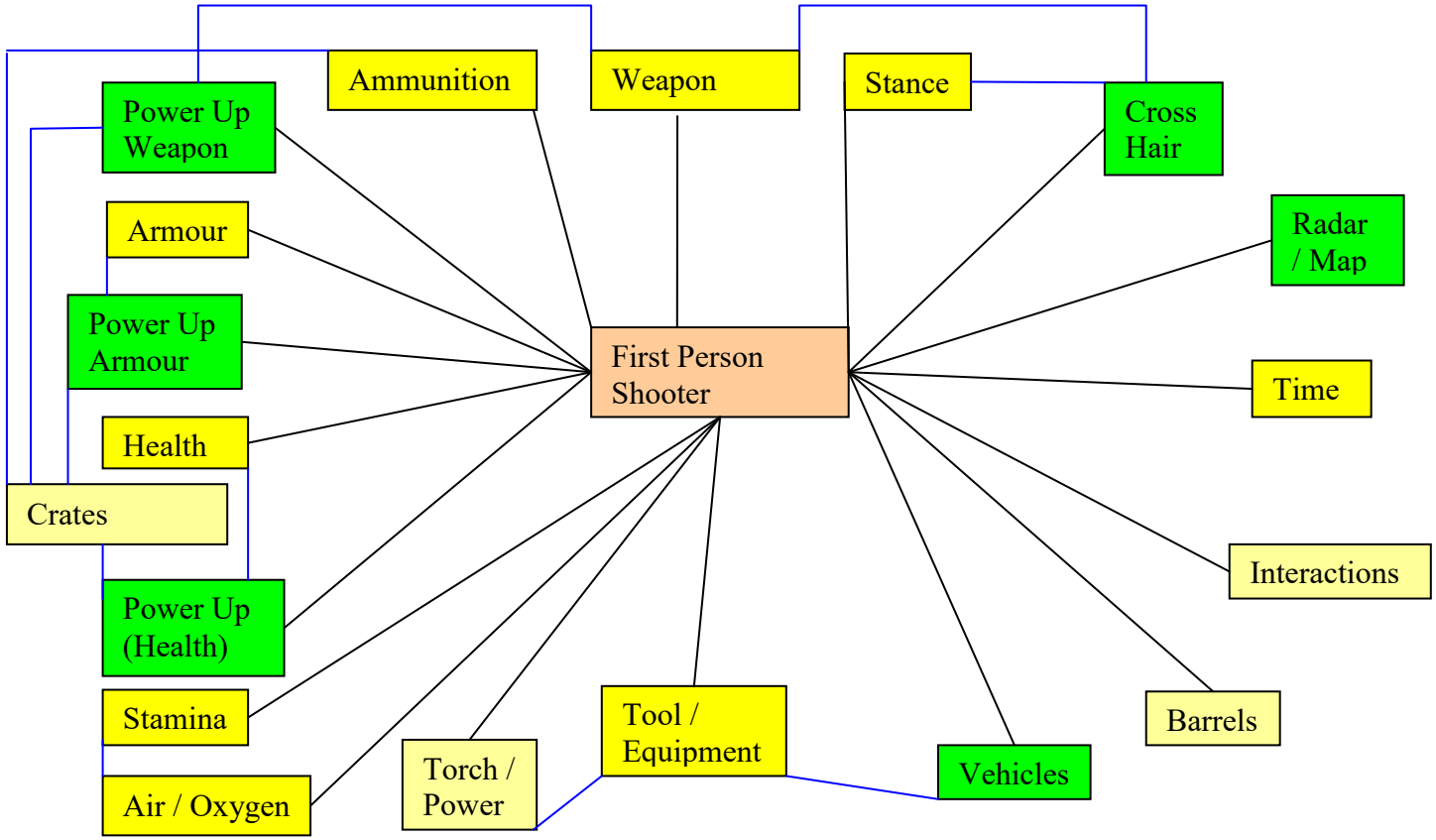
The relationship diagrams were chosen to provide a diagrammatic demonstration of the abstraction taking place and are also intended to demonstrate the sound reasoning behind such abstractions and demonstrate traceability and repeatability in that another researcher could feed similar data (genre specific common forms) into such diagrams and come out with similar results.

8.2 First Person Shooter Common Forms

Within the first person shooting genre the following common forms have been identified:

- Selected Weapon
- Ammunition
- Health Indication
- Armour Indication
- Stamina Indication
- Air / Oxygen Indication
- Torch / Power Indication
- Tool / Equipment
- Radar / Map
- Time
- Cross Hair
- Stance Indication
- Health (Power Ups)
- Weapons and Ammo (Power Ups)
- Armour (Power Ups)
- Interaction Commands
- Vehicles
- Barrels
- Crates

Fig 176. FPS Common Forms

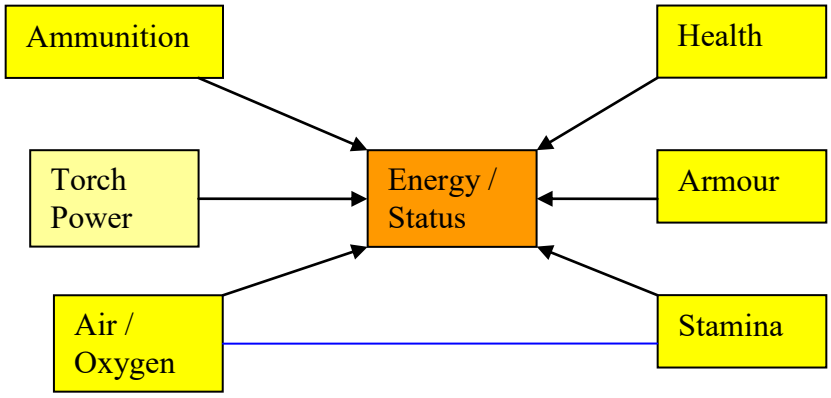


The diagram above depicts the relationships between all the genre specific common forms identified within the first person shooting genre. However, from the diagram it is also possible to see how these genre specific common forms may combine to form more abstract common forms, which will hold greater cross-genre applicability.

To illustrate the points being made, further relationship modelling diagrams are used to demonstrate how genre specific common forms relate to each other and combine.

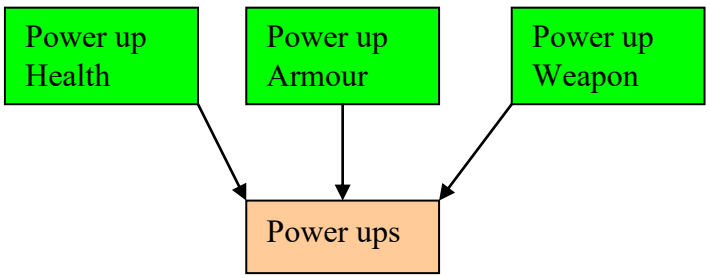
Indicators within the game relating to: health, armour, stamina, air/oxygen supply, torch power and ammunition are all in fact related to the player's overall energy level or status.

Fig 177. Status Common Forms



Likewise the FPS genre frequently features health, armour and weapon power ups. As these three collectables are all simply different variations of the power up, they can easily be generalised simply as power ups.

Fig 178. Power Ups



In a similar manner to the combinations illustrated, a direct one to one linkage can be observed between tools or equipment in the FPS and the common form items. Likewise, stance maps to status icons, time to timer, vehicles to the piloting of vehicles or craft. Finally, the radar and map are both examples of navigational aids and therefore they map to this common form.

8.3 Driving Common Forms

The common forms identified within this genre were:

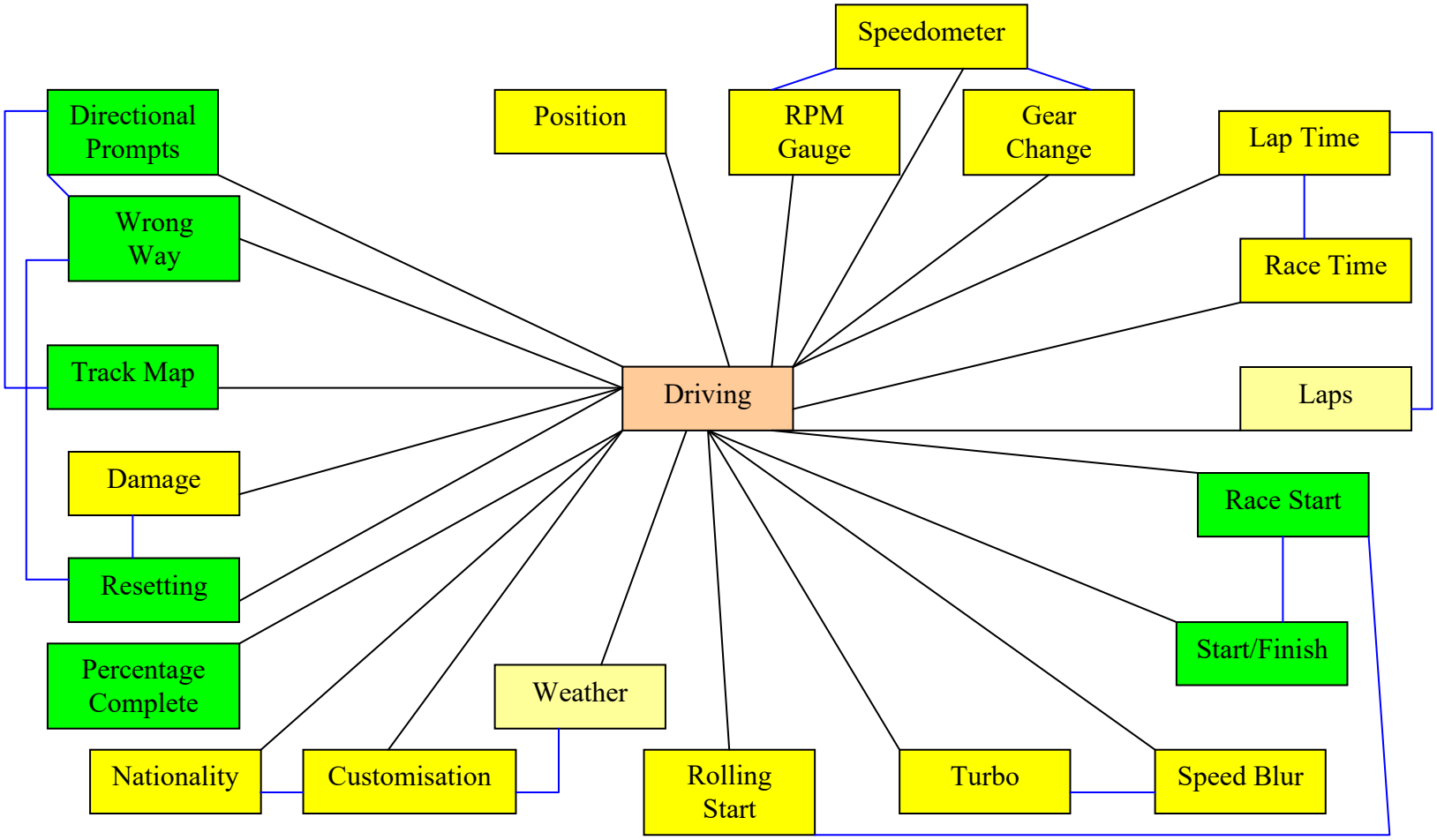
- Driver Nationality (Flags)
- Driver Customisation and Apparel Selection
- Weather Indication
- Change Gear Prompt
- Turbo and/or Nitro
- Car Damage
- Resetting Car Position
- Stage Percentage Complete
- Laps Completed
- Speed / Motion Blur
- Directional Prompts and Stage Progress Bar
- Track Map
- RPM Gauge
- Speedometer
- Gear Indicator
- Rear View Mirror
- Position Indicator
- Lap Timer
- Race Timer
- Wrong Way Indicator
- Race Start Indication
- Rolling Start
- Start / Finish Line

From this investigation, it is interesting to note the idea of one type of common form replacing, or substituting another one. There are two major examples of this:

- A percentage complete or stage progress bar, typically found in rallying games replacing the lap counter found in traditional racing games
- The track map, radar or Global Positioning System (GPS) of traditional racing titles being replaced by a stage progress bar in rallying titles.

Whilst there are exceptions such as titles which use both means of indication such as GTI racing which uses both the lap counter and percentage complete indication it can generally be observed that some variation can be observed between traditional or track based racing titles and titles of the rallying sub-genre in how on screen HUD information is depicted.

Fig 179. Driving Common Forms

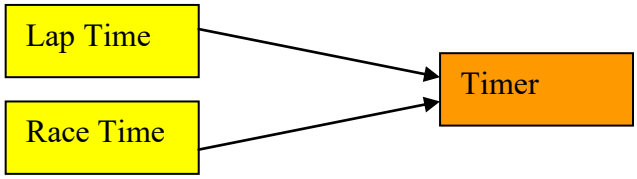


For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

Within the driving genre a considerable amount of genre specific common forms have been identified. Indeed, this has proven to be one of the most fruitful genres for investigation. This section investigates how the many genre specific common forms identified within the driving genre can be condensed into a smaller number of more abstract common forms which hold applicability over a greater number of genres.

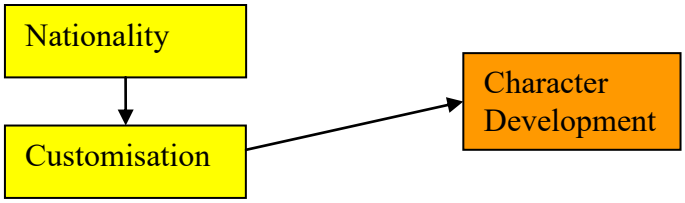
Firstly, it can be observed that the recording of both lap and race time are effectively both referring to the monitoring of the passing of time and therefore they both relate to the timer common form.

Fig 180. Timer Common Forms



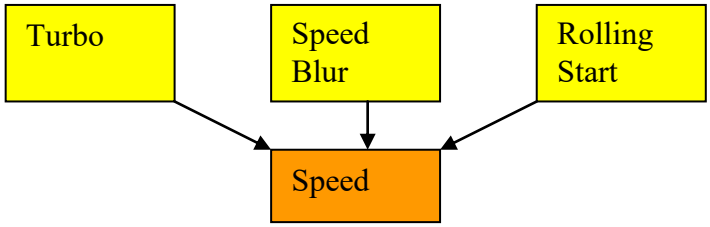
Next it can be observed that the profile customisation options commonly offered in modern driving titles and the ability for the player to select their nationality can both be likened, albeit broadly to the character development common form. As shown in the diagram nationality is in fact just another means of customisation and therefore it is absorbed into the customisation genre specific common form.

Fig 181. Profile Common Forms



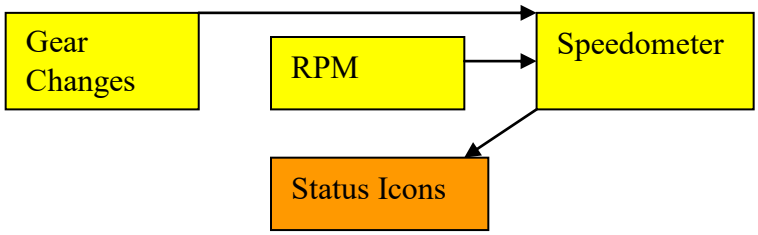
Next, attention is turned to the portrayal of speed. Clearly this is prevalent within this genre and therefore it is unsurprising three common forms represent it; turbo, speed blur and rolling start. However each common form simply refers to a different manifestation of speed and therefore they can all be grouped into a speed common form as shown.

Fig 182. Speed Common Forms



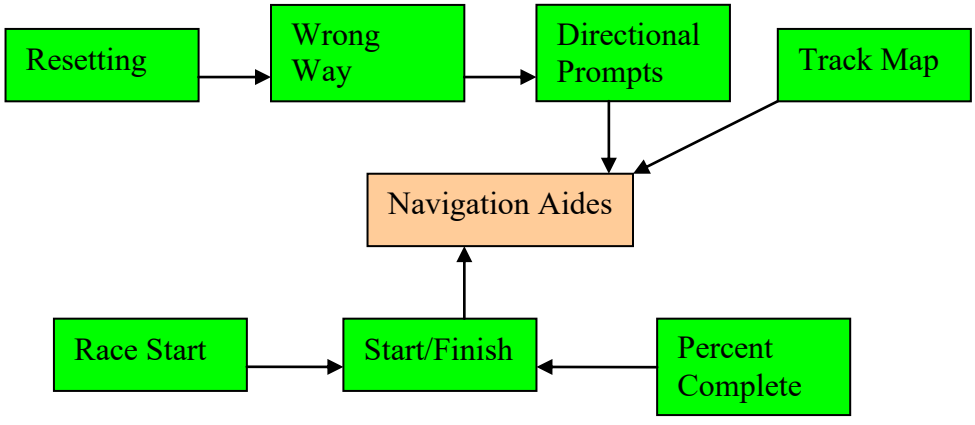
Next the common gauges of speedometer, RPM gauge and gear indication is all absorbed by the status icons common form. Also note how the gear and RPM displays are all grouped into speedometer as in most titles this information is all displayed together on the speedometer.

Fig 183. Driving Status



A majority of the information displayed on the game HUD and within the environment relates to aiding the player's way finding on the track. Seven common forms were identified, these common forms map to the navigation aids common form as shown.

Fig184. Navigation Common Forms



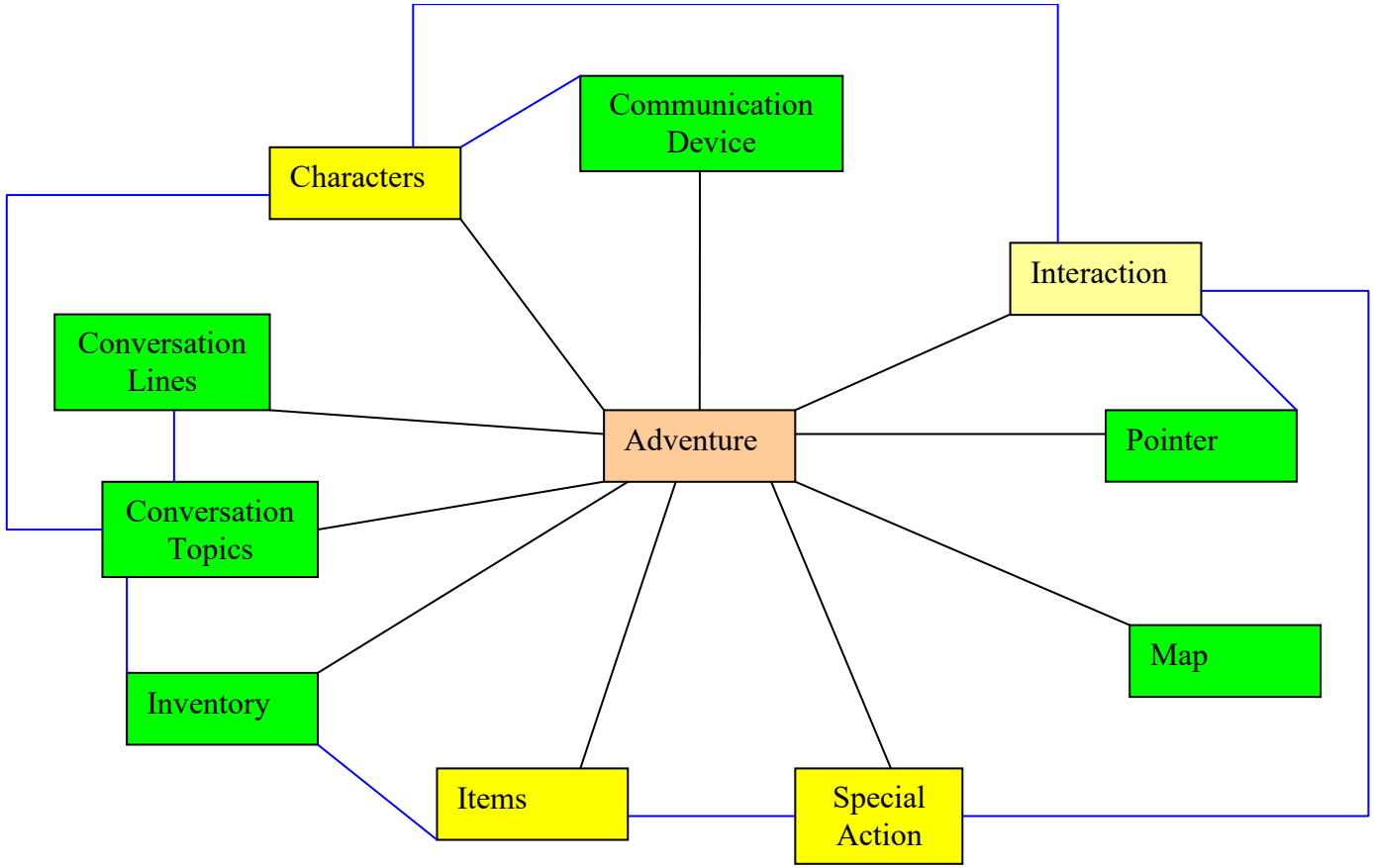
Also note how the genre common forms merge into one another, the player's car position is often reset due to travelling in the wrong direction or off track and so resetting is merged into wrong way which in itself is a type of directional prompt. Likewise, race start is linked to the position of the start and finish line so merges into this and percentage of the race completed is also ultimately related to the positioning of the start and finish line in relation to the player car position, and so this is absorbed too.

8.4 Adventure Common Forms

The common forms identified within this genre were:

- Inventory
- Interaction Commands
- Mouse Pointer
- Conversation Lines
- Conversation Topics
- Map
- Characters
- Items
- Communication Device
- Special Move / Action Command

Fig 185. Adventure Common Forms

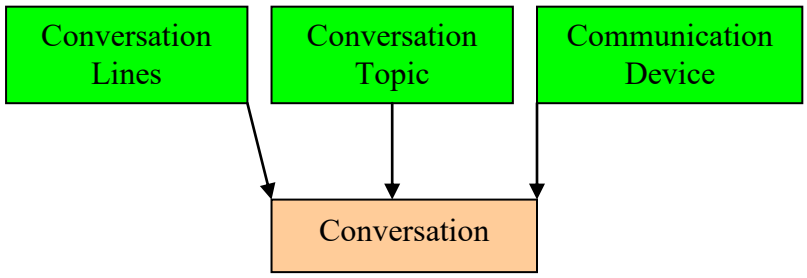


For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

The above diagram depicts the common forms and relationships inherent between them within the adventure genre. This work continues to examine the connections inherent between the common forms already identified with an aim to merging similar common forms to create more abstract common forms with cross genre application.

Within the adventure genre conversation is a vital part of the gameplay and therefore it is unsurprising that no fewer than three common forms relating to it can be found. These are: conversation lines, conversation topics and communication device. Clearly conversation is at the heart of all three and so a general common form of conversation is created.

Fig 186. Communication Common Forms



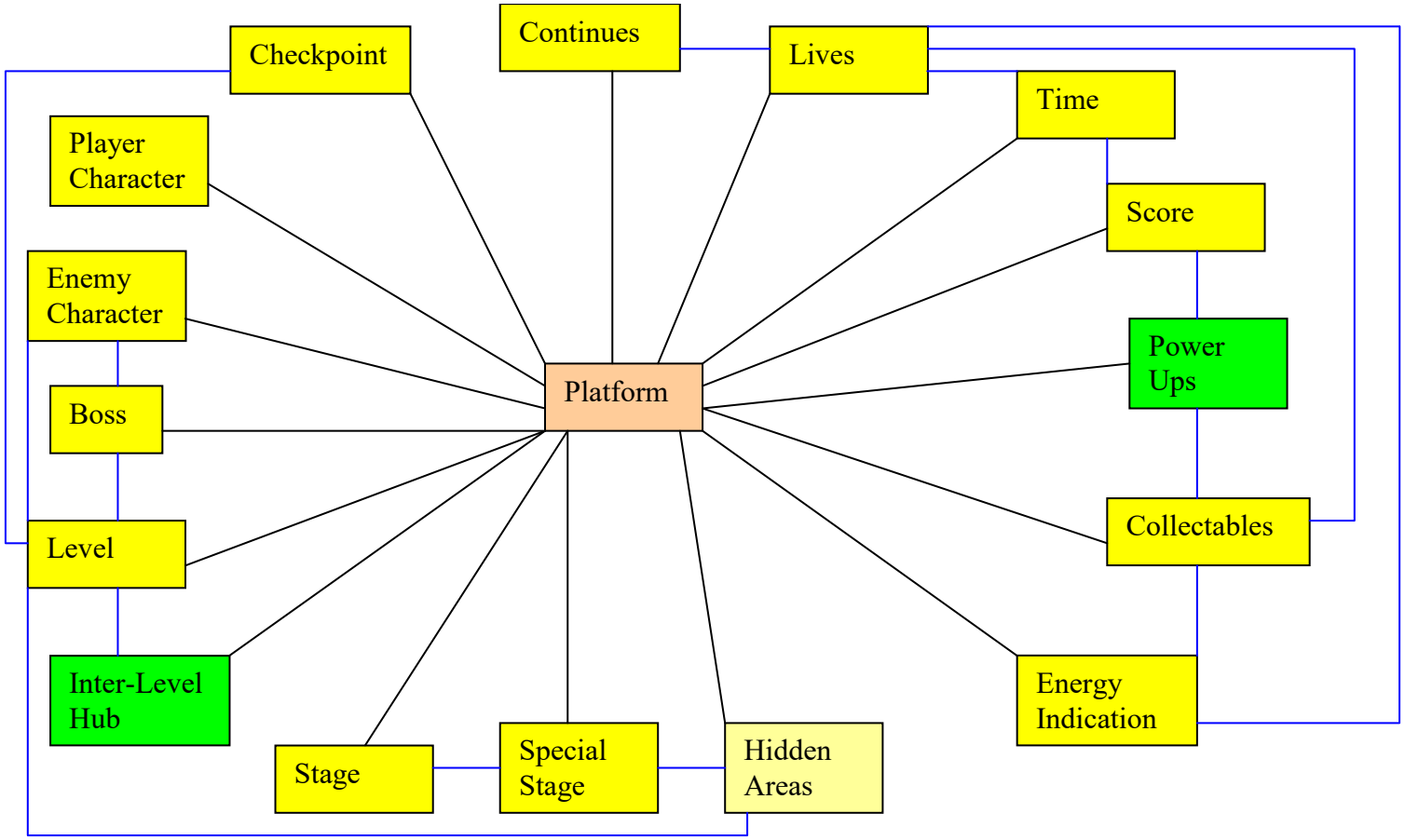
The other mappings within the adventure genre are simply one-to-one relationships which include inventory directly becoming a common form, mouse pointer generalised to cross hair, items becoming a common form, special move or action generalised to special power. Finally, characters became a general common form.

8.5 Platform Common Forms

The common forms identified within this genre were:

- Lives Indication
- Continues
- Checkpoint
- Level
- Stage
- Special Stages
- Hidden Areas
- Energy Indication
- Power Ups
- Collectables
- Inter-Level-Hub
- Score
- Time
- Player Character
- Enemy Characters
- End of Level Boss / Guardian

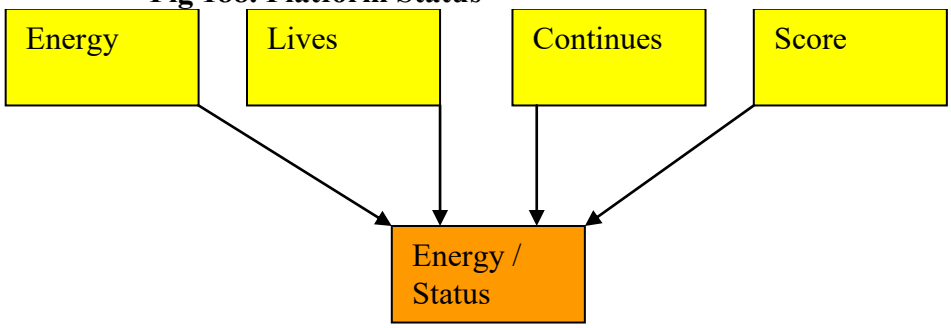
Fig 187. Platform Common Forms



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

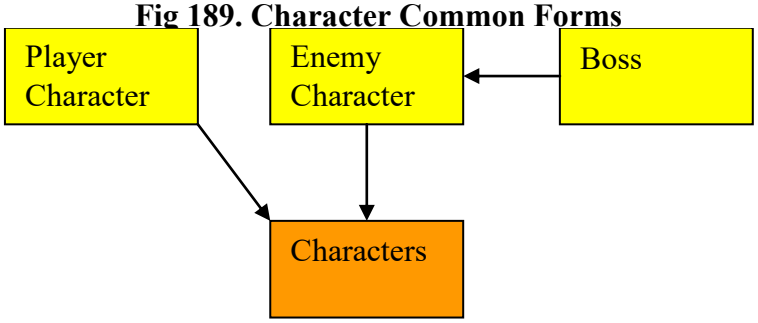
The diagram shown above provides a summary of all common forms and the relationships between them. The investigation continues to look at the relationships between common forms with an aim of combining related common forms into more general or abstract common forms with greater cross genre applicability. Firstly, any statistics relating to player energy or status are generalised into a common form called energy and status indication; these include: lives, continues, energy indication and score.

Fig 188. Platform Status



Next player, enemy characters and bosses all combine into the common form of characters. Also note that a boss character is simply a larger and more powerful form of enemy character and therefore is absorbed into the enemy character common form.

Fig 189. Character Common Forms

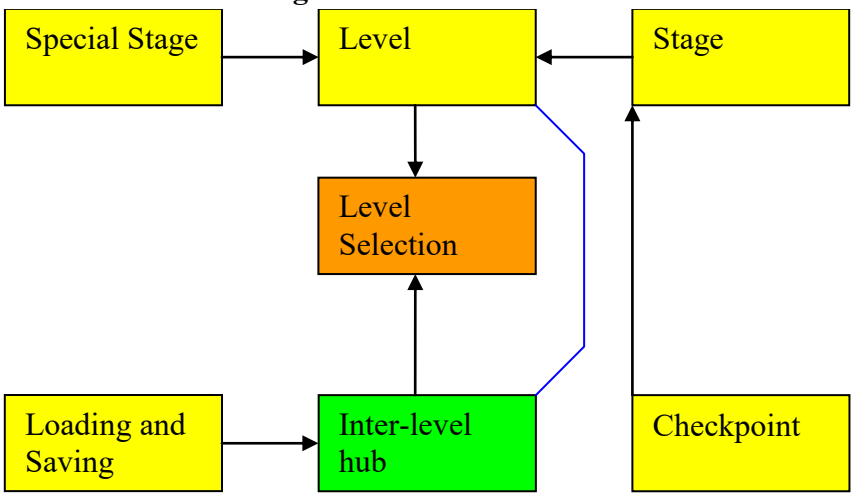


Another major point of note within the platform genre is the careful organisation of the games contents that can be observed via the use of discrete levels and within these there could also be a collection of smaller stages with hidden bonuses such as special stages to find. Indeed, Sonic the Hedgehog uses this very template. Newer titles may also organise this content around a themed inter-level hub.

Therefore, the next mapping aims to absorb all these level based common forms into a single level selection common form. Note how as subsets of the form level both special stage and stage are absorbed into level.

Also notice the optional connection between inter-level hub and level, older games did not have the inter-level hub so it is not universal. Also checkpoints are used for the recording of progress within a stage or level hence the connection to stage. Lastly, a dedicated common form is created for inter-level hub as its applicability has been proven to extend beyond the platform genre.

Fig 190. Level Common Forms



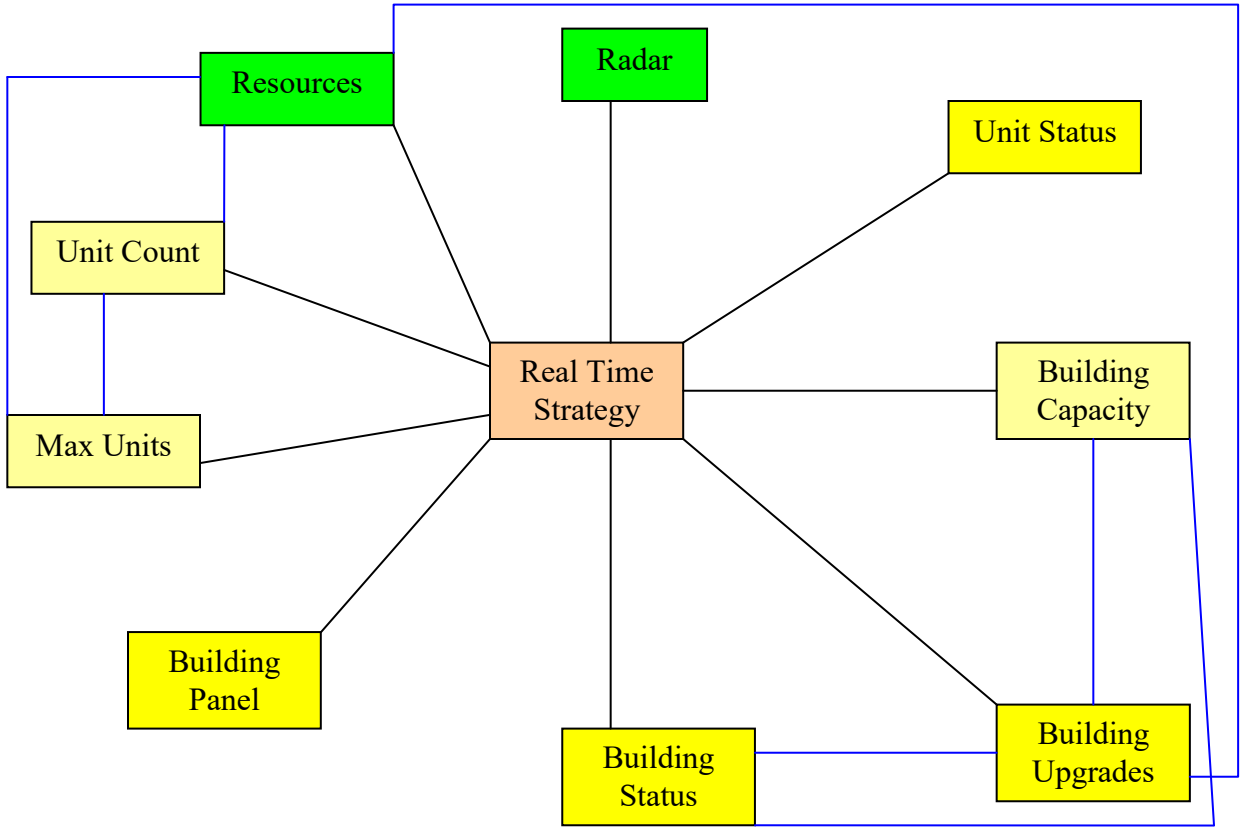
To complete the mapping for this genre, dedicated common forms are created for power ups and collectables is merged with the items common form.

8.6 Real Time Strategy Common Forms

The common forms identified within the genre were:

- Resource Count
- Unit Count
- Maximum Units (Unit Cap)
- Building Panel
- Building Status
- Building Capacity
- Building Upgrades
- Unit Training Panel
- Unit Status
- Radar

Fig 191. Strategy Common Forms

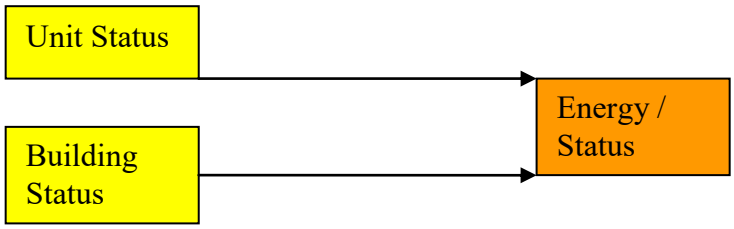


For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

The diagram above shows all common forms identified and relationships within the strategy genre. The investigation continues with the goal of generalising or merging the related common forms coming up with a set of abstracted universal common forms.

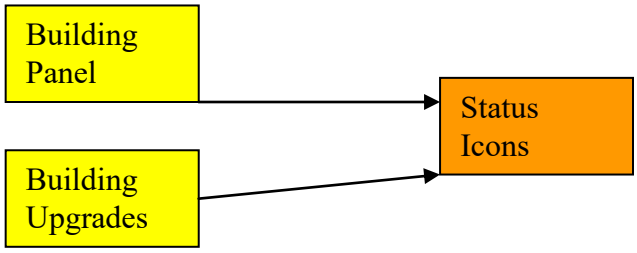
Firstly, whilst there is no single character that energy and status is displayed for, the player can determine the status of any unit or building by selecting it and therefore these two forms can be generalised into the energy and status common form.

Fig 192. Unit, Building Status



Likewise, the building panel which might display as part of the HUD and the building upgrades, which might display for a selected building, are both status icons.

Fig 193. Building Status



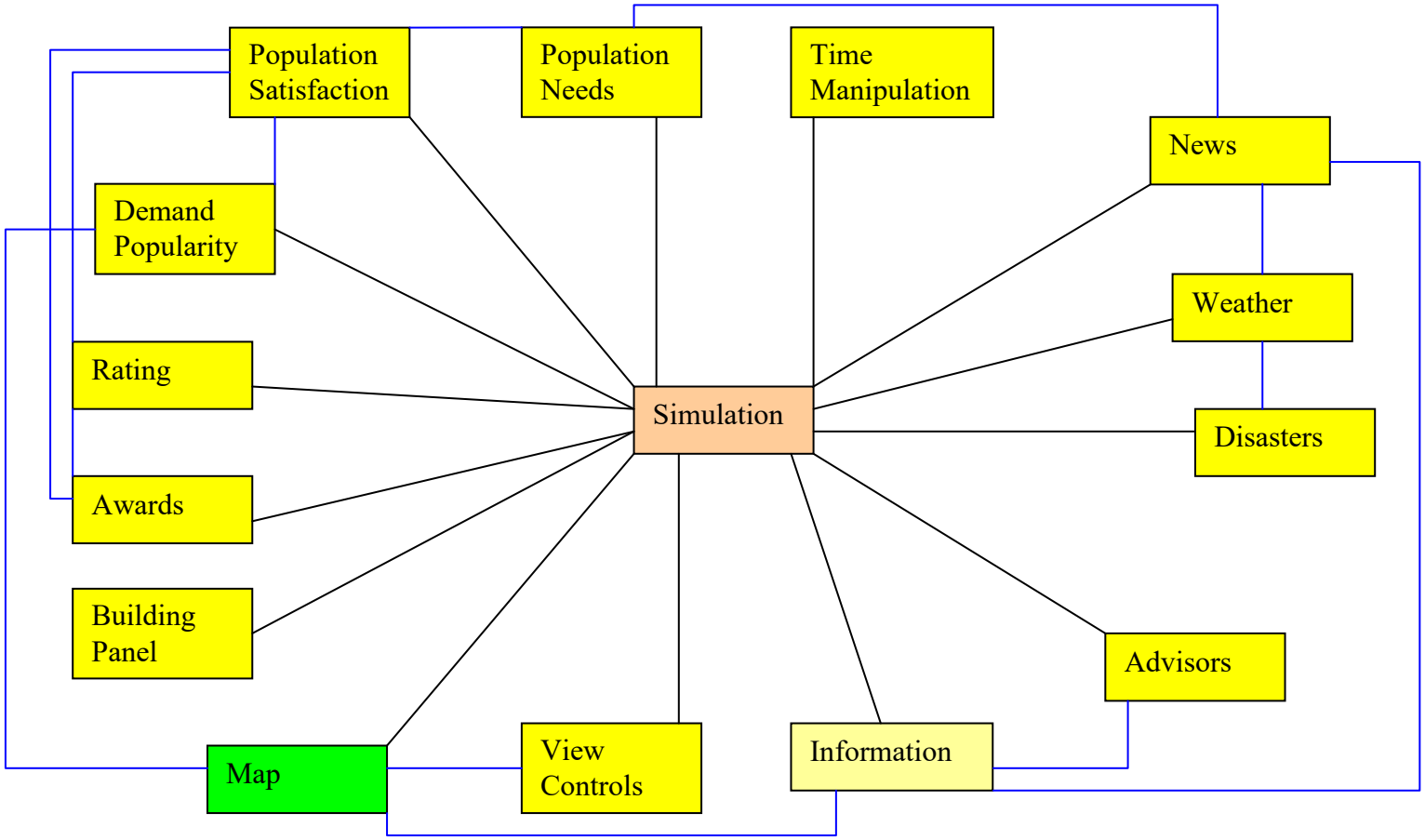
To complete the categorisations for this genre it can be observed that resource count is generalised to become currency and radar becomes part of the navigational aids common form.

8.7 Simulation Common Forms

The common forms identified within this genre were:

- Populace Satisfaction
- Populace Needs
- Demand / Popularity
- Rating
- Awards
- Building Panel
- Map
- Information
- View Controls
- Time Manipulation
- Advisors
- Weather
- Disasters
- Competition and News

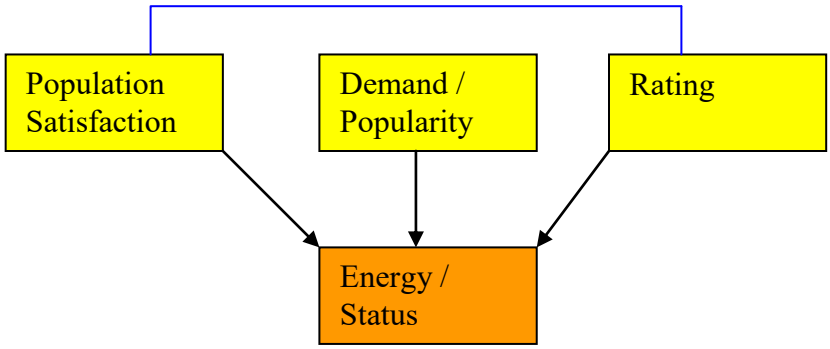
Fig 194. Simulation Common Forms



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

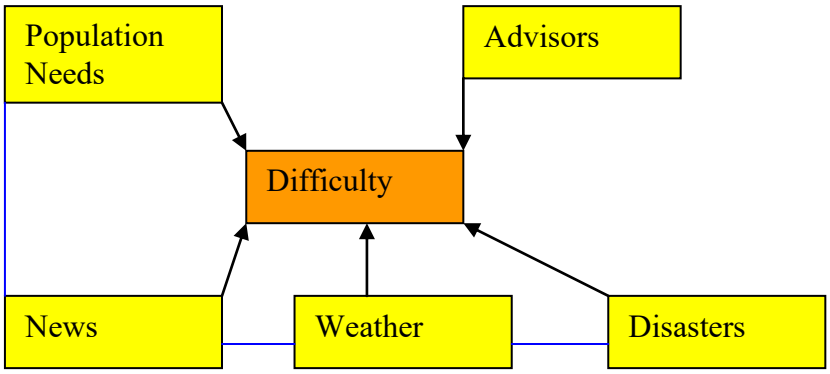
Whilst there is technically no energy bars in simulation titles, some approximations of it can be identified e.g. the happiness or satisfaction levels of the population, demand for the facilities the player can provide and existing popularity of these and overall rating. These can all be approximated to status indication as the diagram shows. Note the optional relationship between population satisfaction and rating, in some titles such as Sim City 4 the two are almost inseparable yet in other titles the player may be able to attain a high rating irrespective of overall population opinion, if present at all.

Fig 195. Rating and Status



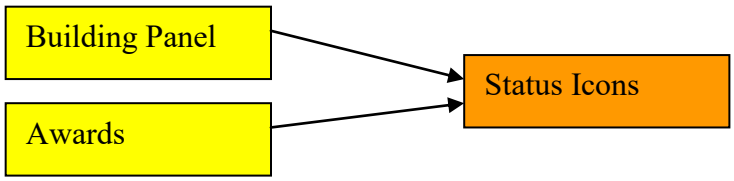
Difficulty can be impacted by population needs, weather conditions (i.e. how they affect attendance or demand), disasters and clean up operations, news and warnings and advisor opinions. These can all be considered to have an impact upon game difficulty and are all part of the difficulty common form as shown. Note the optional relationships, disasters might arise through adverse weather conditions and news may relate to weather or needs of the population but is not exclusively related to these items.

Fig 196. Difficulty Common Forms



The building panel and depictions of any awards the player gains over the course of the game can be both considered as status icons.

Fig 197. Interface Common Forms

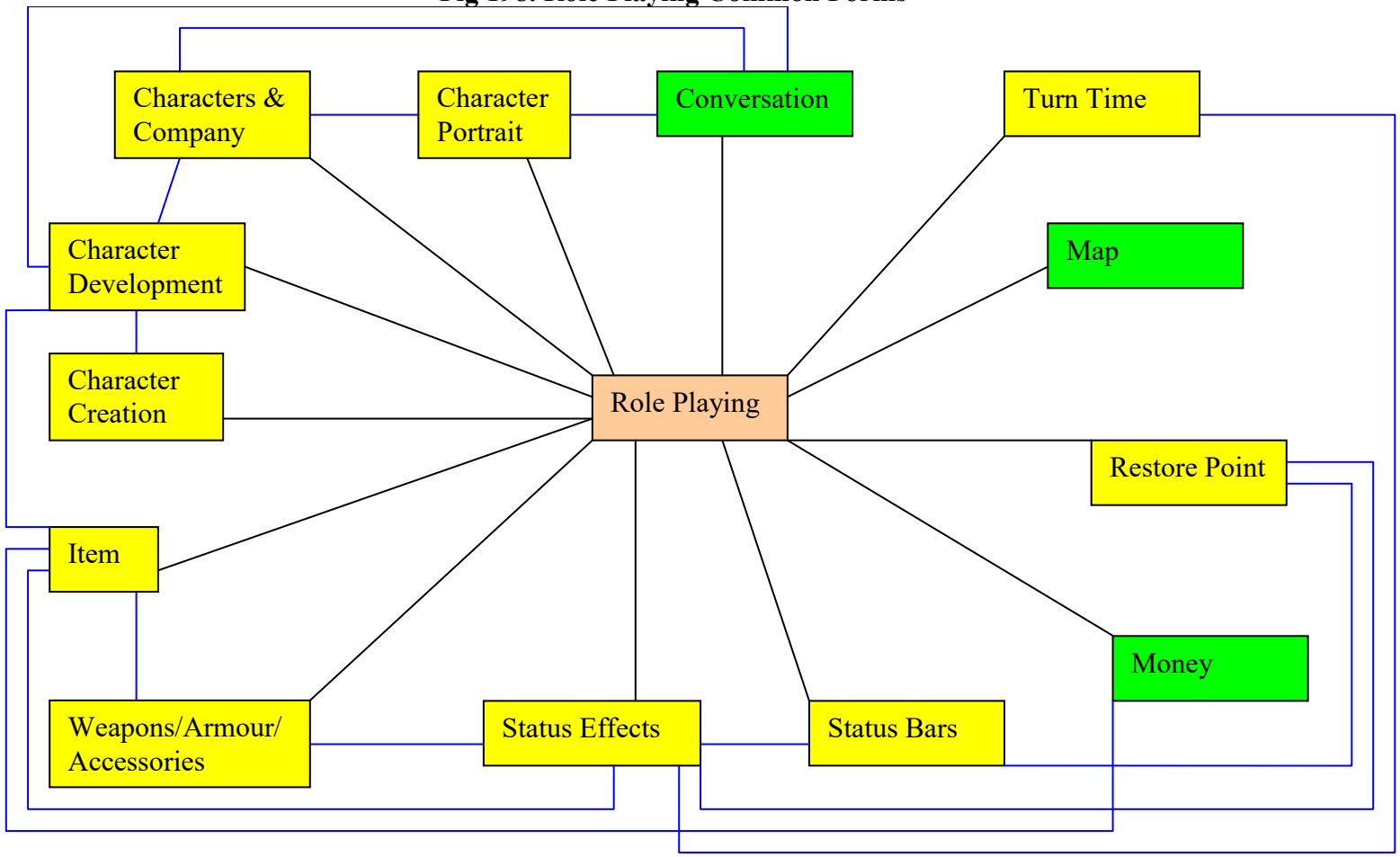


And to complete the mapping for this genre, maps are absorbed into navigational aides, time manipulation into speed and view controls into player representation.

8.8 Role Playing Common Forms

- Characters / Company
- Character Design / Creation
- Character Development
- Character Portrait
- Item
- Weapons / Armour and Accessories
- Status Effects
- Status Bars / Numbers
- Turn Time
- Money
- Map
- Restore Point (Rest)
- Conversation and Dialogue

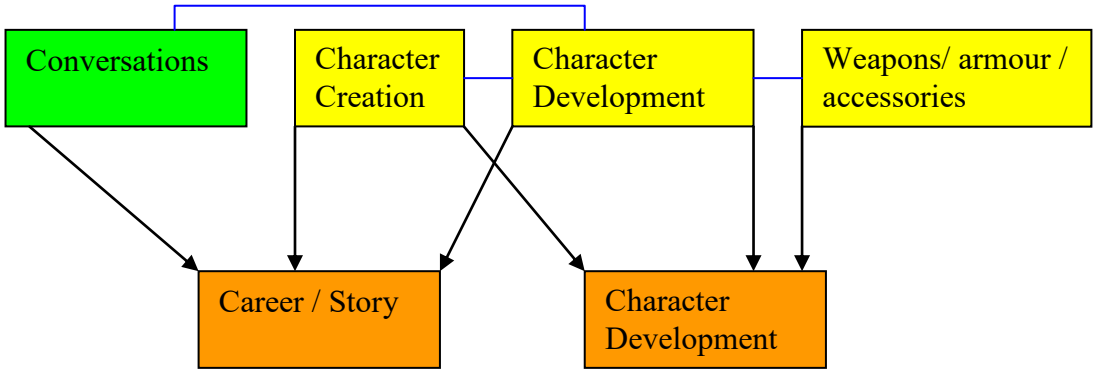
Fig 198. Role Playing Common Forms



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

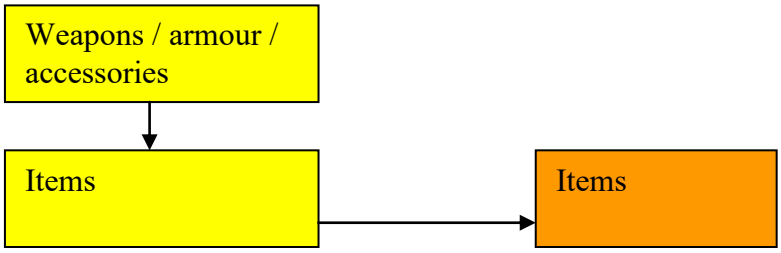
One of the core aspects of role playing titles is creation and subsequent development of characters. These are mapped to a general common form of character development, yet this does not fully describe the role of these forms, so the career and story common form is used in addition. Note the optional relationships, weapons, armour and accessories might aid character development but are not mandatory, character creation often allows basic career, class and attributes to be set affecting future development and conversations and can help characters develop relationships or social skills, but again are not essential.

Fig 199. Character Development



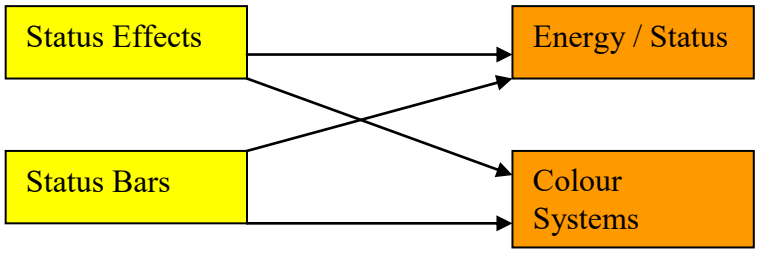
Within role playing titles, the player will most commonly come across weapons, armour and accessories they can equip, and useable items such as medicinal herbs or salves. Initially, these were considered separately but as weapons, armour and accessories are simply a sub-class of the broader class of items they can be considered as one.

Fig 200. Items Common Forms



Player energy is commonly shown via the use of status bars for continuous amounts such as health or magic or by icons to denote status effects such as poison, paralysis, blindness etc. As these both relate closely to the player's energy and status it is clear that merging them into this common form is appropriate. These common forms also make use of colour to denote status and so they are related to this common form too.

Fig 201. Status Effect Common Forms



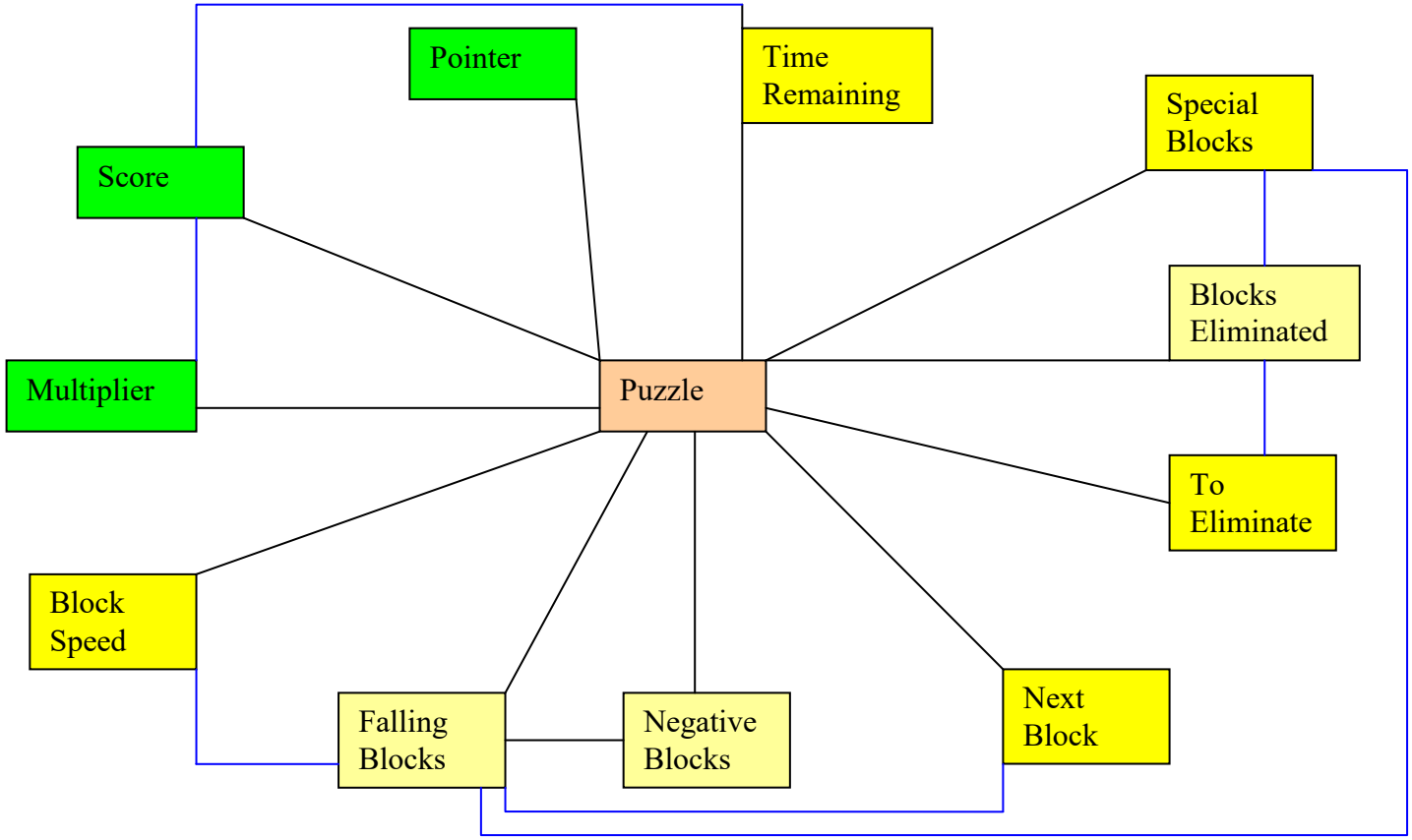
Finally, the categorisation of this genre is rounded off with a number of simple one-to-one relations such as the direct transference of the conversation and character portrait common forms, map to navigation aids, money to currency and finally characters and company to characters. For further generalisation one could consider the character and character portrait common forms together by absorbing character portrait into character.

8.9 Puzzle Common Forms

The common forms identified within this genre were:

- Score/Wins
- Score Multiplier
- Block Speed
- Negative Blocks
- Next Blocks
- Falling Blocks
- Blocks Eliminated
- Block to Eliminate
- Special Blocks
- Time Remaining
- Pointer

Fig 202. Puzzle Common Forms



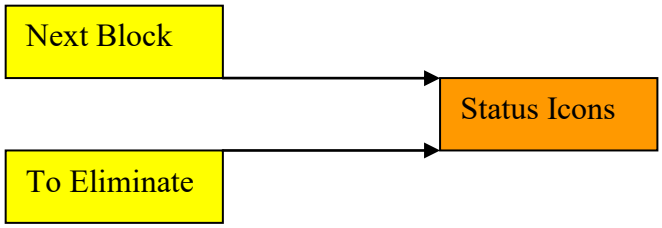
For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

Unfortunately, the number of common forms observable in the puzzle genre was quite limited compared to more active genres such as the first person, driving and role playing. However, it is still interesting to consider relationships from the above diagram and abstractions deduced from this. The player's score is affected directly by the score multiplier and so score and score multiplier can be generalised simply into score.

Fig 203. Score Common Forms

Next block to eliminate and next block to enter play area are usually displayed clearly within the game HUD and therefore can be both considered together as status icons.

Fig 204. Status Common Forms



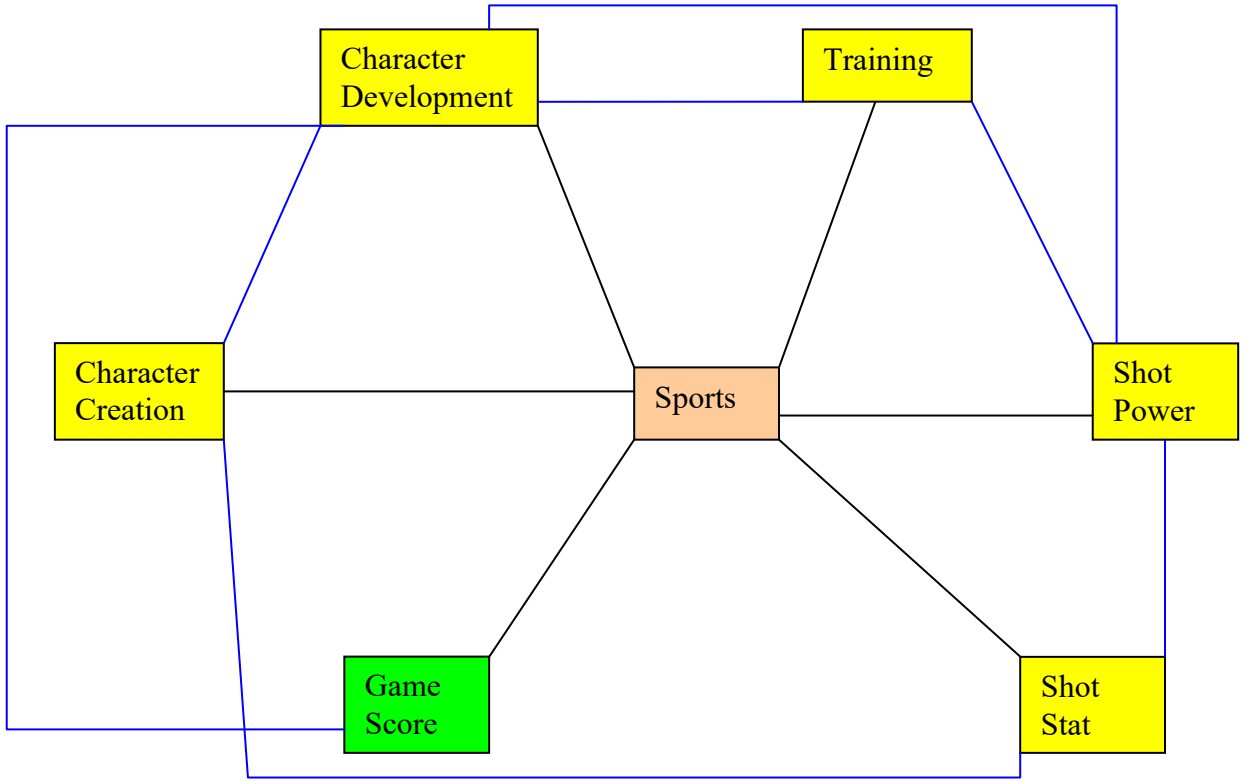
Lastly direct one-to-one relationships are seen between pointer and cross hair, time remaining and timer, block speed and speed and special block and special power.

8.10 Sports Common Forms

The common forms identified within this genre were:

- Character Creation
- Character Development / Customisation
- Shot Power
- Shot Statistics
- Game Score
- Training

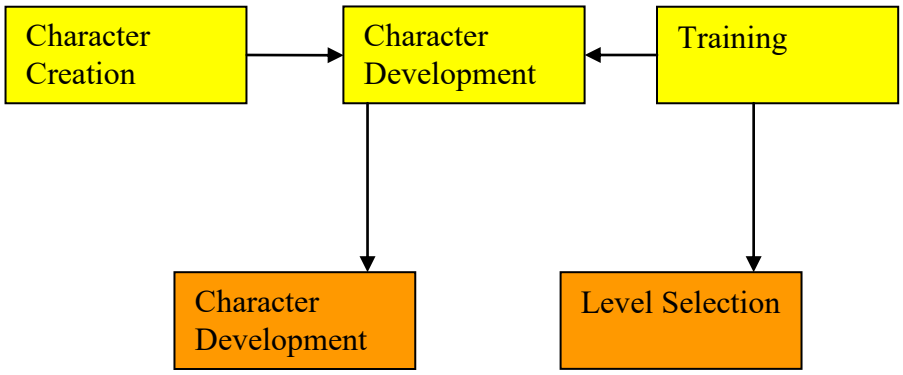
Fig 205. Sports Common Forms



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

Sports titles borrow concepts of character creation and development from RPGs with training a primary means of furthering character development. These three common forms can all be grouped together under character development. However, training is also a means of level selection (in some games) as illustrated.

Fig 206. Character Development



Next, whilst there is rarely any threat on a par with those seen in the traditional action genres, shot power and shot statistics could be likened to a player energy or status indication. Shot power is a subset of shot statistics and so these common forms merge.

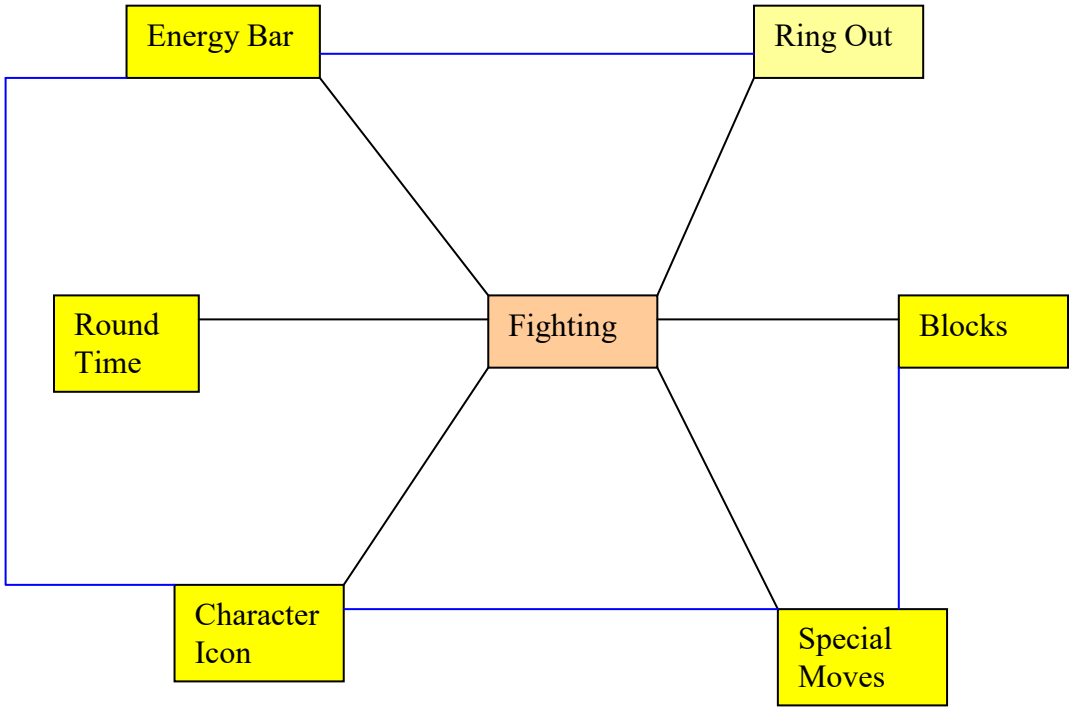
Fig 207. Shot Status Common Forms

8.11 Fighting Common Forms

The Common forms identified within this genre were:

- Energy Bar
- Round Time
- Character Icon
- Special Moves
- Blocks
- Ring Out

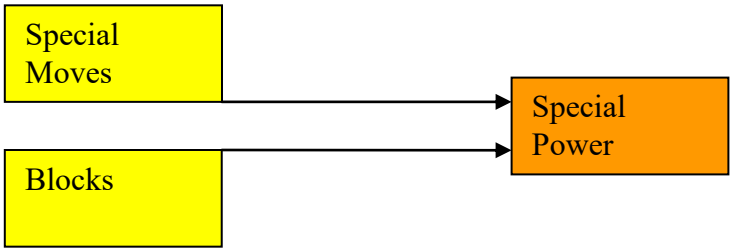
Fig 208. Fighting Common Forms



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

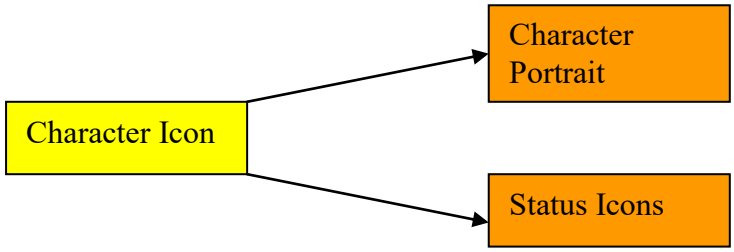
A major facet of the genre is character specific special moves and therefore the special moves and blocks are merged into the special power common form.

Fig 209. Special Power Common Forms



Next the character icon used in the character select screen, which displays next to the relevant characters energy bar relates directly to the character portrait common form but also to the status icon common form.

Fig 210. Character Icon Common Forms



Energy bar simply becomes energy and status and round time becomes timer.

8.12 Genre Specific Conclusions

The investigation into genre specific common forms has revealed and successfully validated a total of one hundred and twenty common forms. A full discussion of each form and how it was found remains beyond the scope of this thesis but is accessible on the unabridged chapter on the included CD-ROM. The investigation performed was comprehensive and provides a good overview of the key common forms of each gaming genre. However, it is believed that further investigation could reveal many more of these common forms. Indeed, the sheer volume of games available, now spanning a heritage of more than forty years means an all-encompassing investigation is rendered impossible. Yet useful insights can still be gained from this partial investigation.

During this stage of the study a vast body of common forms were found by investigating videogames of ten mainstream genres (the choice of these is discussed in 1.6). Detailed analysis and relationship modelling allowed the one hundred and twenty common forms to be reduced into a more easily manageable number and helped to eliminate common forms which are tied to a specific group of games (e.g. block matching puzzlers) or a single genre.

The next stage of this investigation was an in depth discussion of a selection of eight of the common forms discovered in this chapter. The eight most fundamental common forms have been chosen and for readability have been split into two groups of four. The first is discussed in chapter five, the common forms which relate to and affect player status, the second in chapter six, the common forms which relate to and action game status events. Meanwhile the next chapter (9: Common Form Relationship Modelling) takes the common forms discovered in this chapter and uses abstraction processes to reduce the common forms down with an aim to reach a core body of common forms which are most fundamental to the videogame.

A complete discussion of all twenty six common forms discovered can be seen in the accompanying CD ROM (Common Forms Report).

9. Common Form Relationship Modelling

As listed and explained in chapter seven, this study uncovered a total of twenty six common forms of expression related to videogames. Whilst not all of these common forms are universal, the study has proven each common form to exist over a substantial majority of the ten mainstream genres (explained and justified in 1.6).

It is believed likely that further common forms still exist. However, as the study was underway it became increasingly clear many of these common forms are related, some very closely, indeed some common forms seem to depend upon others for their presence.

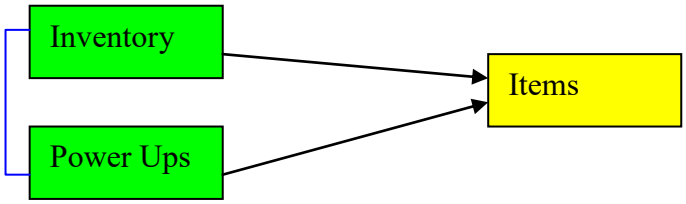
Therefore, from the common forms identified major or core common forms emerged, common forms encompassing two or more other forms. A clear example is the common form of Energy or Status Indication. This common form encompasses status icons, player and character icon or portrait, timer, size as power indication, speed and score at least. These common forms, which make up part of a major common form, will be labelled as sub-common forms. That is not to say these common forms are unimportant, but simply used to aid effective classification and build towards a meaningful hierarchy.

This chapter presents possible common form classifications with diagrams showing relationships between common forms and then discusses these with an aim of finding an optimal common form grouping. Throughout, a continued aim is to move towards finding higher levels of abstraction by grouping together common forms most closely related, to ultimately arrive at a core set of common forms fundamental to videogames.

However, to ensure only common forms with universal application across videogames are considered, the first section examines how non-universal common forms are enveloped by universal common forms to strengthen the model. In the diagram below, inventory and power ups combine into the universal common form items.

Note, the optional relationship between inventory and power ups; a player may be allowed to store power ups in their inventory but this is by no means guaranteed.

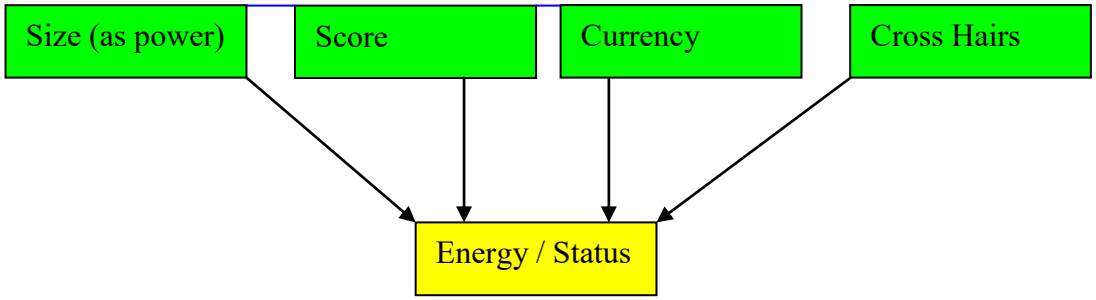
Fig 211. Items Relationships



For a key, and explanation of the notation used in the diagram above and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

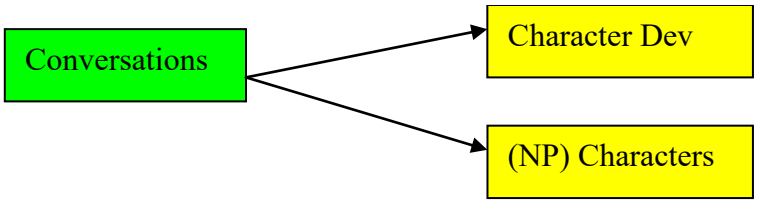
Next the importance of the energy / status representation common form is revealed, it encompasses a number of both non-universal and universal common forms. However, this section is restricted to the relationships it has with non-universal common forms. Note the optional relationship between size and score, a player may have greater opportunity to score points against stronger opponents. Also currency can be a form of scoring the players performance or may be a separate metric.

Fig 212. Status Inheritance



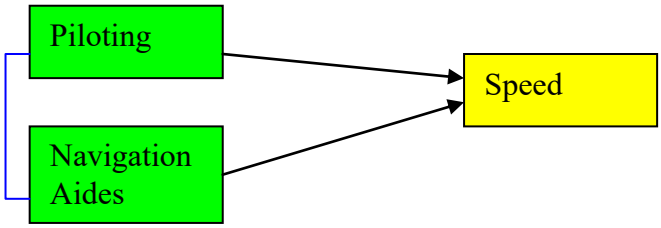
The conversational common form provides an interesting case as it is reliant upon two universal common forms, those of character development e.g. in the case of a RPG, conversation is a vital component, and connects to (NP) characters as conversations generally take place between the player and one (or more) NPCs.

Fig 213. Conversation Relationships



Next, some connections may not be immediately obvious for example, navigational aides actually impacts greatly upon the player avatar's speed, in terms of enabling progress. Piloting also relates to speed as the player's choices as driver/pilot will directly impact upon the speed of the vehicle. Notice the optional relationship between piloting and navigation aids, often when driving/piloting the player will be provided with navigational aids yet these may also be provided whilst the player is exploring on foot and so are not necessarily dependant.

Fig 214. Speed Inheritance



9.1 Four Master Common Forms

This categorisation groups the sixteen universal common forms under four distinct major common forms: Status Representation, Characters and Communication, Time Monitoring and Manipulation and Interface.

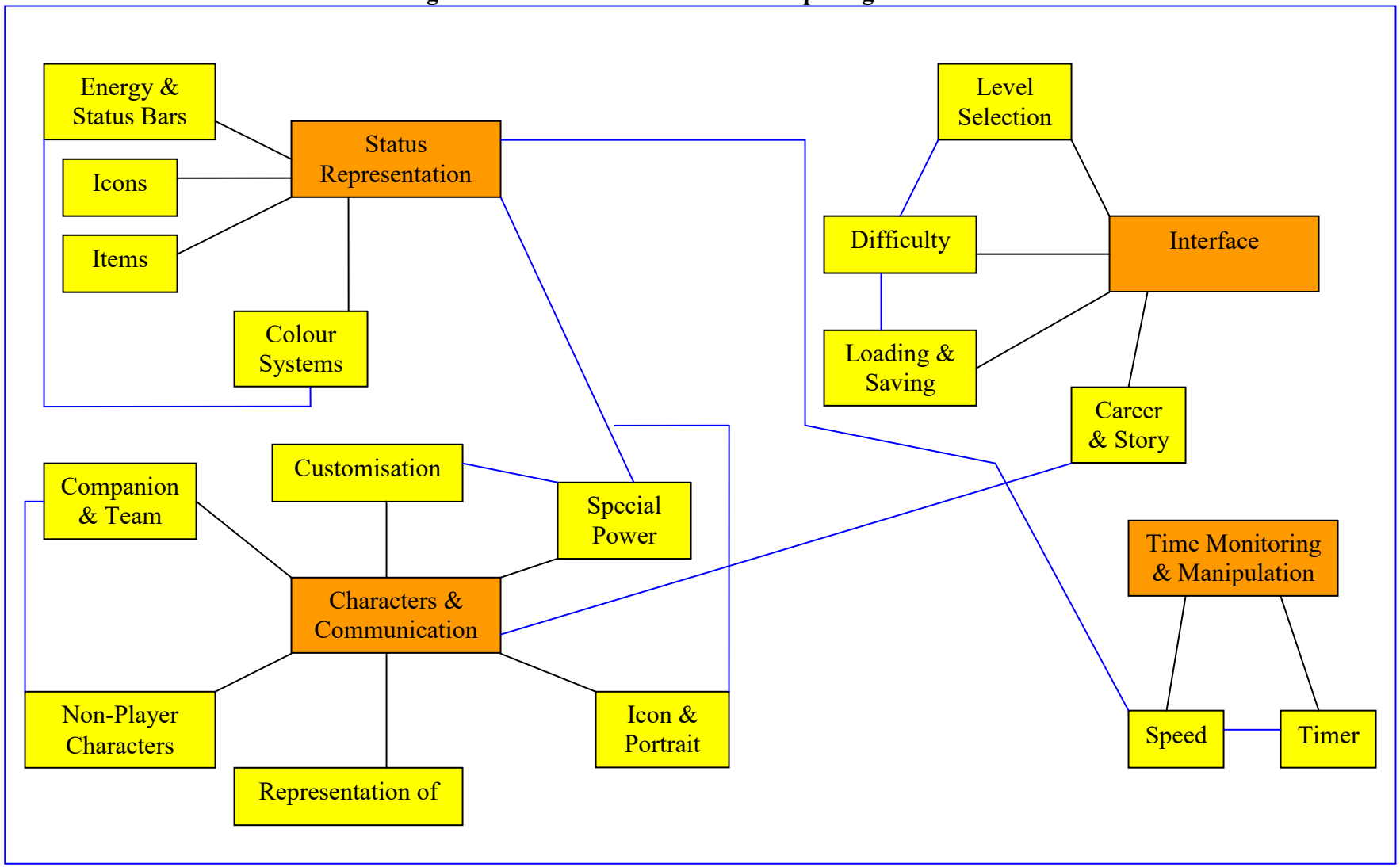
- **Status Representation**
  - Energy / Status Bars
  - Icons
  - Colour Systems
  - Items
- **Characters and Communication**
  - Player Character Icon / Portrait
  - Player Companions / Team Mates
  - Physical Representation of the Player Character
  - Character Customisation / Development
  - Character Special Power
  - Non player Characters
- **Time Monitoring and Manipulation**
  - Timer
  - Speed
- **Interface**
  - Level / Stage / Mission Selection
  - Difficulty
  - Loading and Saving of Game Data
  - The Presence of a Career or Story Mode

In the diagrams used during this chapter, the black lines refer to mandatory relationships taking place between major common forms and common forms e.g. the relationship between colour and status representation. These types of relationships typically denote inheritance or transference e.g. major common form Status Representation inherits the features of the Icons, Items, Colour and Energy Bars and Status common forms.

Blue lines show optional relationships and can be between common forms or major common forms e.g. the relationship between non player characters and companion and team. These simply show shared aspects or concepts e.g. Non Player Characters could be the player's companion or a member of the players team but they equally might be neutral to the players cause or even an enemy. Hence these kinds of relationship are not absolute; they are only true in some cases, not all.

The orange background is used to denote major common forms whilst the associated sub-common forms have yellow backgrounds. For a full key, and complete explanation of the notation used in the diagram below and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams.

Fig 215. Four Master CF Relationship Diagram



9.2 Further Abstraction: Three Master Common Forms

This categorisation moves towards the ultimate goal of simplifying the mapping as much as possible with just three common form categories: Status Representation, Characters and Communication and Challenge and Progression. Furthermore, the Interface major common form from previous mapping (Fig 215) has been generalised to Challenge and Progression and expanded to include timer and loading and saving of data common forms. This means time monitoring and manipulation major common form is no longer required so all common forms can be represented with just three major common forms.

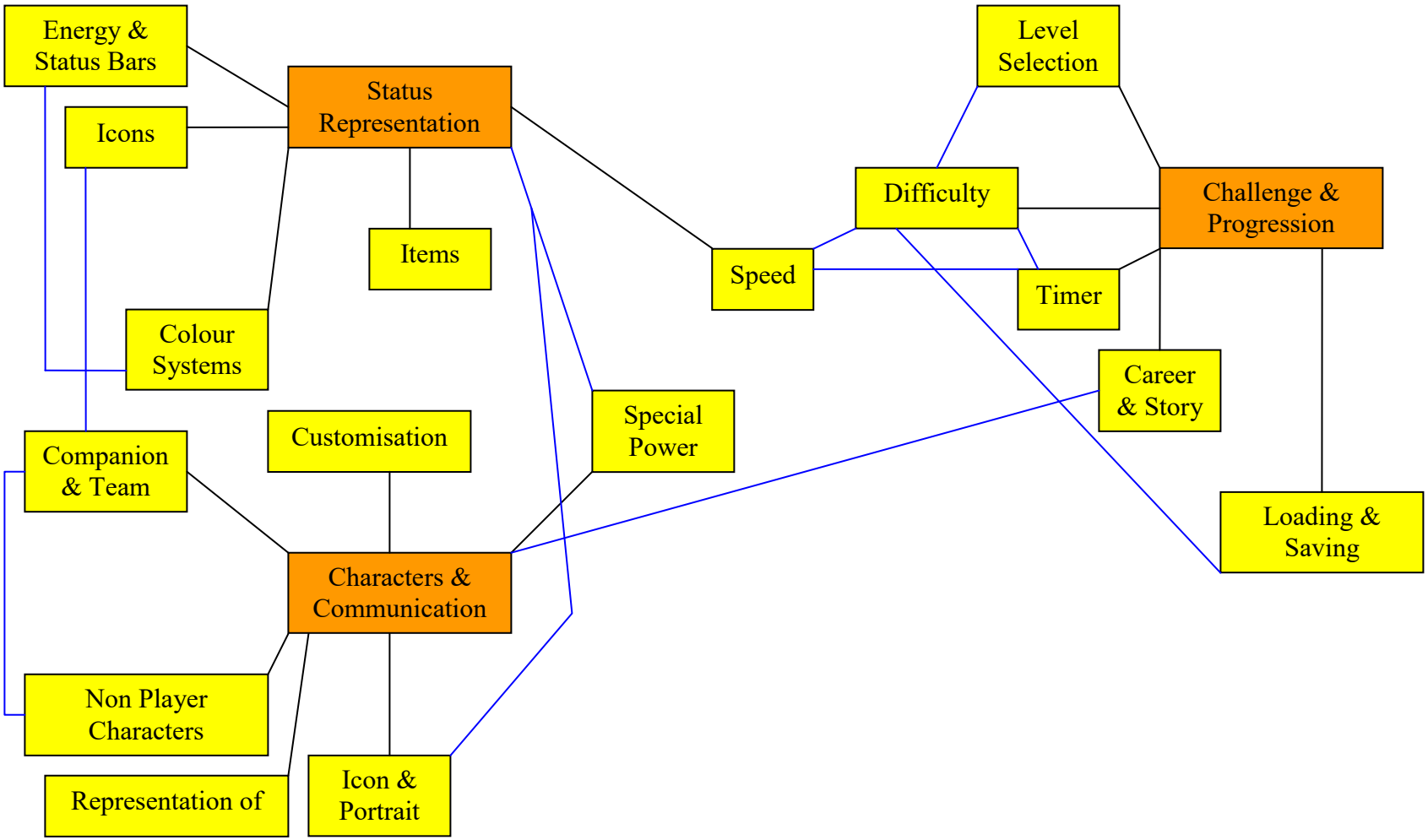
- **Status Representation**
    - Energy / Status Bars
    - Icons
    - Colour Systems
    - Size (as power)
    - Speed
- **Characters and Communication**
    - Player Character Icon / Portrait
    - Player Companions / Team Mates
    - Physical Representation of the Player Character
    - Character Customisation / Development
    - Character Special Power
    - Non Player Characters
- **Challenge and Progression**
    - Timer
    - Loading and Saving of Game Data
    - Level / Stage / Mission Selection
    - Difficulty
    - The Presence of a Career or Story Mode

For a key, and explanation of the notation used in the diagram below and throughout this chapter, please see Appendix C: Key for Common Form Mapping Diagrams (for general guidance see section 9.1).

As Figure 216 (below) features a number of optional relationships (blue lines) some explanation is provided to clarify. The optional relationships between difficulty and saving and loading, timer and speed indicate that each of these aspects can be altered, in a game, to increase or decrease the difficulty which, the player perceives. For example, increasing the speed of enemies in a shooting game or the speed at which the blocks fall in Tetris will clearly make the game harder to succeed at.

The optional relationship between speed and time means that, in games which aim to portray a realistic flow of time, the speed of the game changing also influences the passage of time in that game. For example, if the player enables 'bullet time' in Max Payne 2, it is not only the player character that enters slow motion but all the other characters and events of the game world. Similarly, in Sim City, if the player speeds up the game, the passage of time increases with weeks and months passing in seconds and game events occur sooner (Juul, 2004).

Fig 216. Three Master Common Forms Relationship Diagram

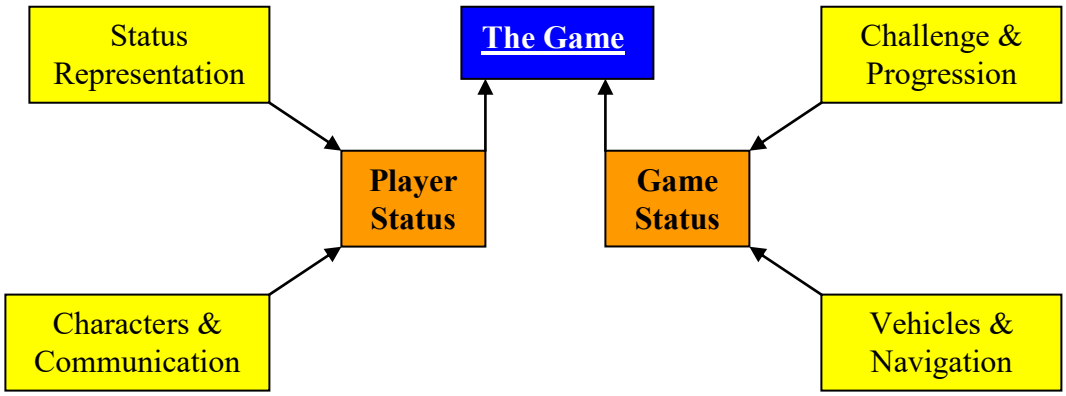


9.3 Highest Abstraction: Towards Two Master Tropes

The final models move towards highest levels of abstraction possible to describe game content. The previous model attempted to classify videogame content using four major common forms. This section goes further to investigate the possibility of describing a games content using just two. In broad terms, within any game there is information relating directly to the player e.g. player energy, score, lives, money, resources, items, equipment, apparel etc. There is also information relating to the game and how the game presents challenges, dangers and threats for the player to deal with, which can include: levels, stages, timers, difficulty selection, enemies, guardians, bosses etc.

From the previous mapping (Fig 216), the major common forms of status representation and characters and communication combine to form player status, whilst challenge and progression and vehicles and navigation combine to form game status.

Fig 217. Two Master Tropes



The gameplay of videogames therefore is formed via the constant struggle of the player's resources versus those of the game i.e. the threats the game poses to the player e.g. how much energy the player has versus how many enemies are left to be defeated or how much money the player has versus the demand for new property or number of collectables on the level versus how much time the player has to complete the level.

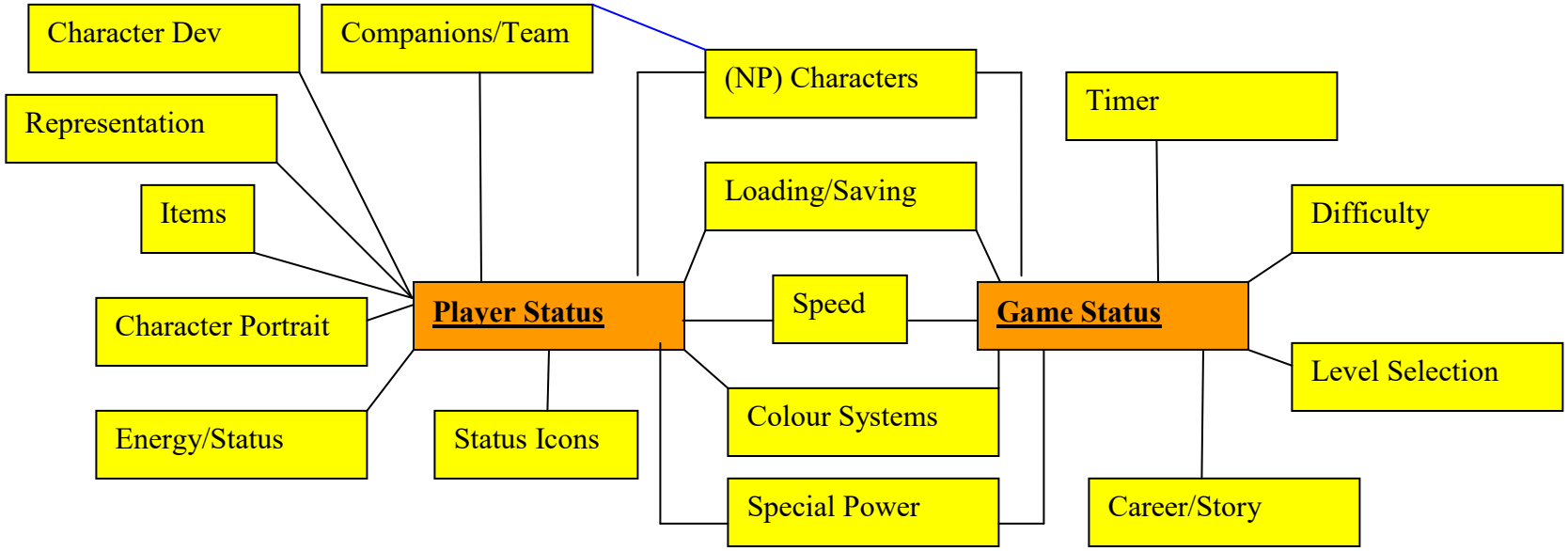
So at its most basic a game could be surmised as player status relating to the player's available resources and game status relating to the threats the game imposes on the player, just two forms to represent contents of an entire game, or indeed, all videogames.

It is believed sound videogame design depends greatly on effective balancing of a player's resources i.e. the tools, facilities, capabilities or funds a player is given against the difficulty of the games challenges, threats and problems. Indeed, as major authors such as Koster (2005) and Adams attest, it is vital for a game to pitch its challenges at the correct level. That is, slightly above what the player is comfortable with giving (to allow for strategy development) but should never be at a level that seems insurmountable. Therefore, to create the required challenge, games impose limits upon the player's resources (player status) or ability to acquire them and increasing the number of dangers, threats or problems within the game world (game status).

It is this balancing that needs to be maintained for a game to be sufficiently challenging, immersive and engaging. If it becomes too easy for a player to acquire resources (or if the player finds a loophole in the games challenges) then the player's resources will outnumber the games threats and challenge is lost. The reverse is also true. However, these player resource and game threat levels cannot remain static over the game as different levels are needed to maintain the correct quotient of challenge as a player who has already progressed some way into the game will be more adept than one who has just begun. So initially the game would be more generous in the resources e.g. energy restorers, collectables etc it affords the player than it would be half way through or near the end.

As the diagram illustrates, many of the universal common forms actually provide a bridging between the two major common forms holding relevance both as a resource the player is proffered but also serving as a game threat e.g. by the games internal systems serving to limit the provision of the resource. For example, saving the game could be considered as one of the player's resources to help the player to maintain their progress. However, as in many RPGs the player might only be allowed to save at specific points in the level (dungeon) i.e. here the game status has imposed a limitation on how the player may use one of their resources (saving progress).

Fig 218. Two Master Tropes Relationship Diagram

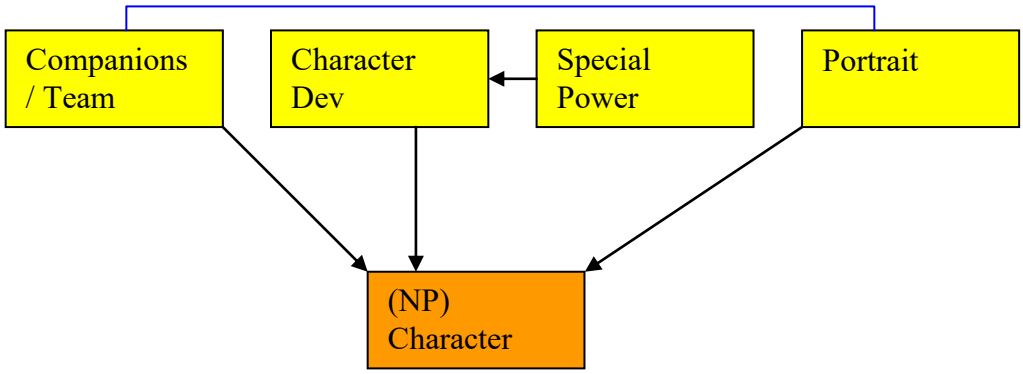


9.4 Common Form Generalisation

Whilst the mapping is far clearer with only universal common forms displayed it is still possible to further abstract the body of universal common forms.

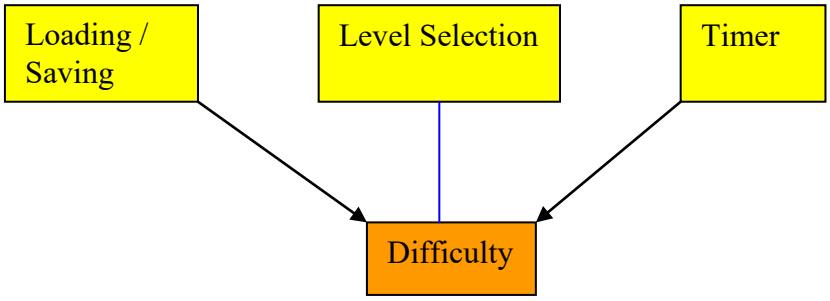
Characters are important to a vast majority of titles whether this is in the form of the player maintaining and developing their own character or conversing and teaming up with other intelligent beings. Therefore, there are four common forms related to characters, which are, companions and team mates, character development, character portrait and special moves all of which can be related to the universal common form of (NP) characters. Notice how character development absorbs the special power common form.

Fig 219. NPC Common Form Inheritance



Next loading and saving and the presence (or otherwise) of a timer are methods at the developers disposal of modifying the games overall difficulty level and therefore, each of these forms can be absorbed into the difficulty form. Note the optional relationship of level selection, it can impact upon difficulty but also serves other functions so does not dissolve into the common form.

Fig 220. Difficulty Inheritance

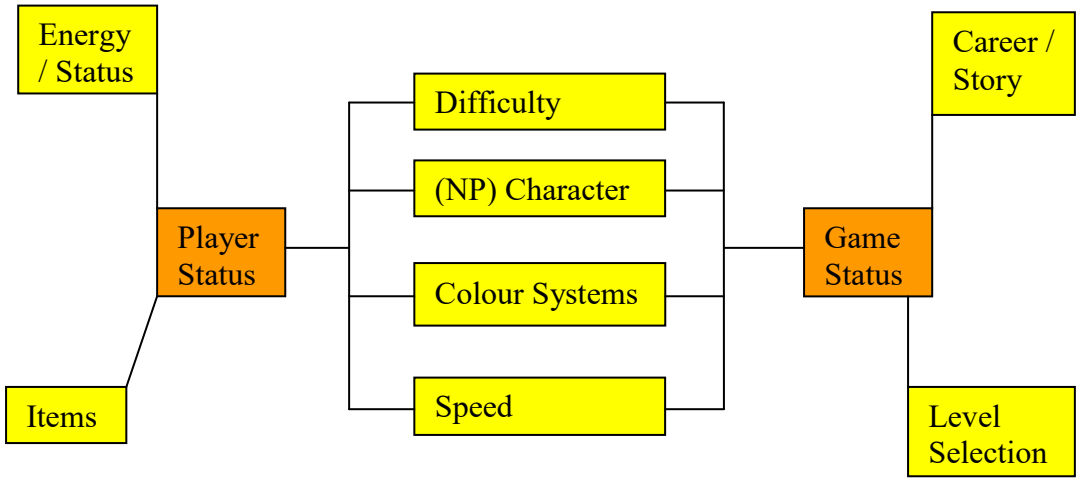


Finally direct one to one relationships can be observed between status icons and energy and status meaning that energy and status absorbs status icons and speed, colour systems, items, level selection and career and story remain unaltered. This leaves a total of eight generalised universal common forms which are:

1. (NP) Character
2. Difficulty
3. Energy and Status
4. Speed
5. Colour Systems
6. Items
7. Level Selection
8. Career and Story

These are then related to the core common forms identified; of game and player status.

Fig 221. Game and Player Status Bridge



Above a direct split can be observed, in which, four of the universal common forms hold equal application to player and game status providing the strong bridging effect already touched upon, whilst a further four are exclusive to player and game status with player status holding two common forms and game status also holding two.

9.5 Common Form Relationship Summary

This chapter has presented three possible candidate mappings for the sixteen universal common forms and gone further to examine the relationships inherent between common forms, constantly generalising across forms and ultimately eliminating any redundancy leaving only the most vital forms to the game experience.

The first categorisation and mapping (Fig 215) provides a good starting point, although the presence of the inter-level hub common form as a part of the major common form interface is questionable as in most cases it is a fundamental part of the game environment and hence its relationship with the game interface might be only tentative at best.

However, the external relationship effectively reinforces its position as a valuable aide to player navigation through the game. Furthermore, in the characters and communication section, conversations do not have any external relationships. This seems unlikely in reality; would the player's companions and team mates not converse with the player?

The second version of the mapping (Fig 216) effectively corrects these inconsistencies and offers greater abstraction, reducing the number of major common forms from four to three whilst successfully representing all sixteen of the universal common forms. This is achieved by widening the interface common form to challenge and progression whilst removing the time monitoring and manipulation common form absorbing timer into the new challenge and progression common form and speed into player status. Furthermore, it makes some improvements, career and story becomes part of challenge and progression, it was debateable whether this minor common form belonged in the interface major common form as they were not primarily interface objects. However, this second mapping loses some of the detail of the previous mappings by not portraying how the minor common forms impact on the passage of time in the game world.

The third model (Fig 218) achieves highest abstraction possible whilst still providing insight into the nature of videogames. The result, two kinds of status, that of player status or the resources the player has at their disposal and game status or the threats and challenges. One might assume an object related to player status (resources) cannot possibly be relevant to game status (threats). However, as model three demonstrates there is overlap.

In fact, no fewer than five of the sixteen common forms hold relevance to both status types, effectively acting like a bridge, showing the two status types, whilst in competition in creating the gameplay experience, are closely related.

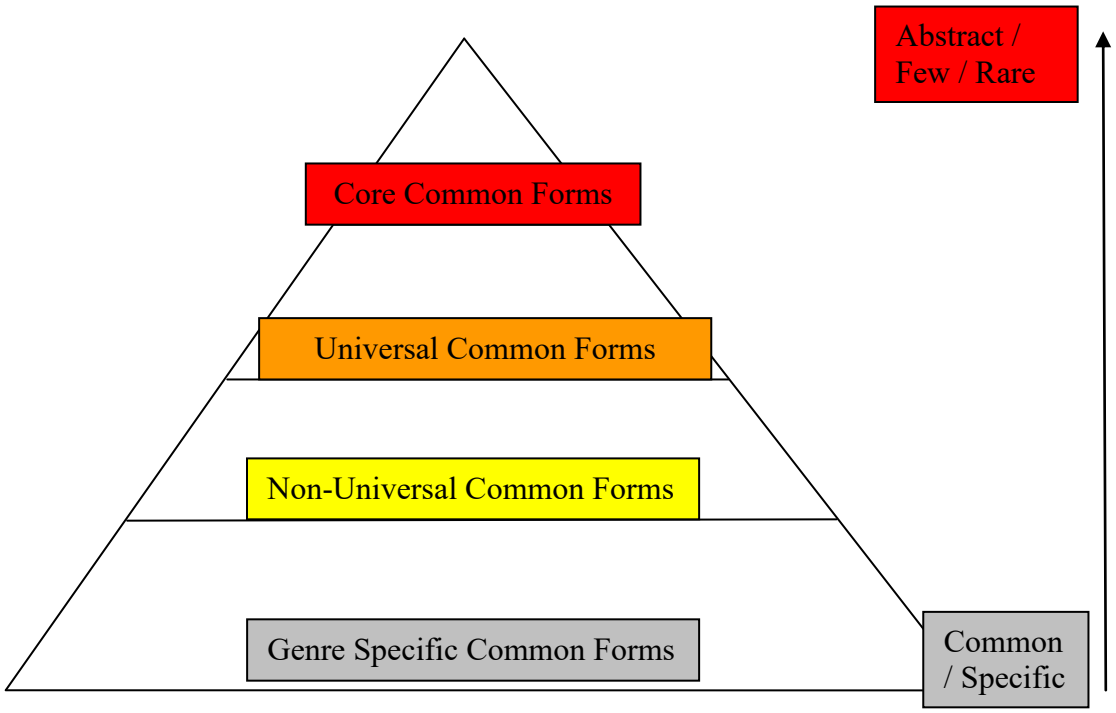
The fourth relationship model (Fig 221), which is a refinement of the highest abstraction model (Fig 218), aims to simplify the overall model in the interests of usability and readability by only including eight common forms generalised from the original sixteen. One may consider these common forms to hold the greatest value and hence, these are most relevant to the overall model. This simplified model provides the opportunity for additions to be made, such as the plotting of the, one hundred plus, genre specific common forms in relation to the eight generalised common forms identified. Furthermore, this fourth model further emphasises the close relationships between player and game status with four of the eight forms holding application over both status types reinforcing the bridging principle.

The work shows movement towards a hierarchical content based model. The model features three core levels. The most effective way to visualise the model is with a pyramid representation shown below, where the peak represents the highest level of abstraction; there will be very few of the core common forms that occupy this position, but these common forms will be highly general. Thus, they have greatest applicability across games and may reveal additional insight into the nature of videogames.

At the next level down are the universal common forms and non-universal common forms. As the pyramid below shows, these can be broken into two distinct levels and in this case the non-universal common forms are a level lower because they do not have proven application.

Finally, at the bottom of the pyramid, the lowest level, one can see the genre-specific common forms. These are the exact opposite of the core common forms as they are hugely prevalent with over one hundred and twenty already discovered. However, their prevalence is so great that it is likely several more could be discovered.

Fig 222. Hierarchical Pyramid Model Draft



10. Pyramid Model Testing

10.1 Testing Methodology

The preceding chapters demonstrate the development and usage of the pyramid common form model in describing the contents of 'traditional' videogames, that is, games from the ten established genres, from Poole (2000), and on mainstream gaming platforms. Whilst, the decision to base the study on mainstream genres and platforms is justified (see section 1.6), it remains a valuable pursuit to test the model outside of its original specification to see how it copes with unplanned for genres and games.

The testing summarised in this chapter achieves this by testing the model on new and emergent genres such as rhythm, survival horror and casual (including social networking), well beyond the scope of the existing study.

In addition, effort was made to test games over a number of platforms, which were not considered in the original study, such as the motion control environment of the Nintendo Wii, the touch screen of the Nintendo DS as in puzzle and educational games such as Brain Training and finally, the casual games available on social networking sites.

The tables and keys in the following pages show the raw data as gathered during gameplay sessions. Please note that the black shading means that the common form had full or high degree of presence in that game and is equated to a presence score of one for that common form, whilst grey shading represents optional or limited presence of the form and hence was only equal to half a point. No shading means that no common form presence was observed in that game and so a score of zero is recorded. These scores are totalled and used to describe overall common form presence in this unique sample of games. This data will be discussed and explained in the context of the pyramid common form model, with a view to exposing any limitations and weaknesses in the model.

On the following tables black shading represents a strong example of common form, demonstrated as clearly present and/or a major part of the overall gameplay, grey a optional or partial example i.e. the common form presence is weak e.g. has little impact on gameplay or is an optional part of the overall game experience. Finally, white indicates that no existence of the common form could be detected in the game tested.

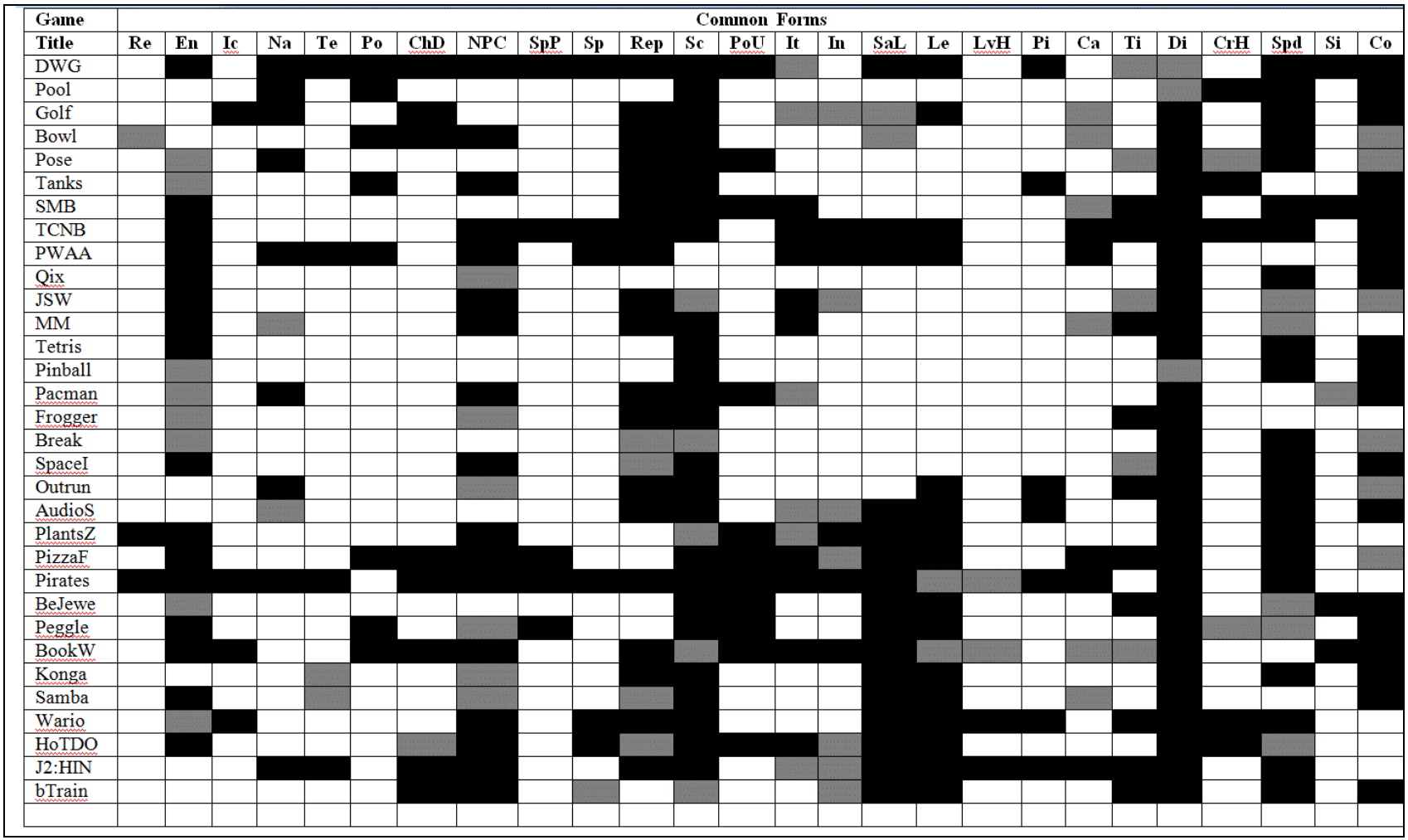
For information on the development of the pyramid model and accompanying application please see the enclosed CD-ROM.

Please note the data gathered used the widest body of common forms available, the twenty-six non-universal common forms. This helped to ensure minimal data loss i.e. through a game having features the common forms could not describe.

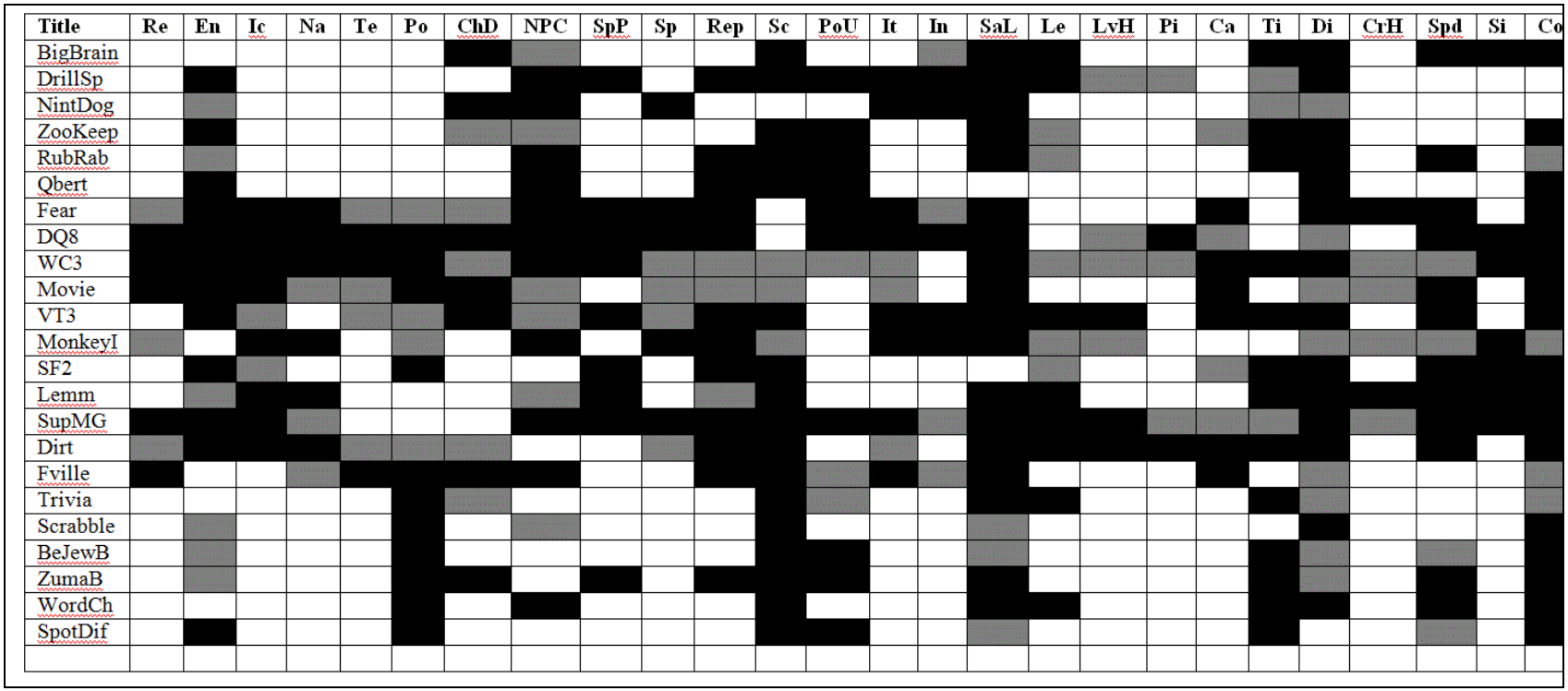
Fig 223. Key for Common Form Data Tables

Key to Games Tested	Common Form Abbreviation
DWG: Dynasty Warriors Gundam Pool: Wii Play: Pool Golf: Wii Sports Golf Bowl: Wii Sports Bowling Pose: Wii Play: Pose Mii Tanks: Wii Play: Tanks SMB: Super Mario Brothers (NES) TCNB: Trauma Centre: New Blood PWAA: Phoenix Wright Ace Attorney JSW: Jet Set Willy MM: Manic Miner Pinball: 3D Pinball for Windows: Space Cadet Pacman Frogger (1992 remake of 1981 original) Break: Breakout (Java based webgame) SpaceI: Space Invaders (based on 1978 original) AudioS: Audio Surf PlantsZ: Plants Vs Zombies PizzaF: Pizza Frenzy Pirates: Sid Meier's Pirates (2004 release) BeJew: Bejewelled 2 Deluxe Peggle: Peggle Deluxe BookW: Bookworm Adventures Deluxe Konga: Donkey Konga Samba: Samba de Amigo Wario: Warioware Smooth Moves HoTDO: House of the Dead: Overkill J2:HIN: Juiced 2: Hot Import Nights bTrain: Brain Training BigBrain: Big Brain Academy DrillSp: Mr. Driller: Drill Spirits NintDog: Nintendogs: Labrador and Friends ZooKeep: Zookeeper RubRab: The Rub Rabbits Qbert: Qbert Fear: FEAR Scrabble (on Facebook) BejewB: Bejewelled Blitz (on Facebook) ZumaB: Zuma Blitz (on Facebook)	Re: Resources En: Energy Na: Navigation Ic: Icon Te: Team Po: Portrait ChD: Character Development NPC: Non Player Character SpP: Special Power Sp: Speech Rep: Representation of Player Character Sc: Score PoU: Power Ups It: Items In: Inventory SaL: Save and Load Le: Level Select LvH: Level Hub Pi: Piloting Ca: Career Ti: Timer Di: Difficulty CrH: Cross Hair Spd: Speed Si: Size Co: Colour
	DQ8: Dragon Quest VIII WC3: Warcraft 3 Movie: The Movies VT3: Virtua Tennis 3 MonkeyI: The Secret of Monkey Island SF2: Streetfighter 2 Lemm: Lemmings SuperMG: Super Mario Galaxy Dirt: Colin Mc Rae Rally Dirt Fville: Farmville (on Facebook) Trivia: Know it all Trivia Quiz (on Facebook) WordCh: Word Challenge Pro (on Facebook) SpotDif: Spot the Difference (on Facebook)

Fig 224. Raw Common Form Usage Data by Game



Game	Common Forms																								
Title	Re	En	Ic	Na	Te	Po	ChD	NPC	SpP	Sp	Rep	Sc	PoU	It	In	SaL	Le	LvH	Pi	Ca	Ti	Di	CrH	Spd	Si	Co
DWG		■		■	■	■	■	■	■	■	■	■	■	▒		■	■		■		▒	▒		■	■	■
Pool				■		■						■										▒	■	■		■
Golf			■	■			■				■	■		▒	▒	▒	■			▒		■		■		■
Bowl	▒					■	■	■			■	■				▒				▒		■		■		▒
Pose		▒		■							■	■	■								▒	■	▒	■		▒
Tanks		▒				■		■			■	■							■			■	■			■
SMB		■									■	■	■	■						▒	■	■		■	■	■
TCNB		■						■	■	■	■	■		■	■	■	■			■	■	■	■	■		■
PWAA		■		■	■	■		■		■	■			■	■	■	■			■		■				■
Qix		■						▒														■		■		■
JSW		■						■			■	▒		■	▒						▒	■		▒		▒
MM		■		▒				■			■	■		■						▒	■	■		▒		
Tetris		■										■										■		■		■
Pinball		▒										■										▒		■		■
Pacman		▒		■				■			■	■	■	▒								■			▒	■
Frogger		▒						▒			■	■									■	■				
Break		▒									▒	▒										■		■		▒
SpaceI		■						■			▒	■									▒	■		■		■
Outrun				■				▒			■	■					■		■		■	■				▒
AudioS				▒							■	■		▒	▒	■	■		■			■				■
PlantsZ	■	■						■				▒	■	▒	■	■	■					■				
PizzaF		■				■	■	■	■			■	■	■	▒	■	■			■	■	■		■		▒
Pirates	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	▒	▒	■	■		■		■		
BeJewe		▒										■	■			■	■				■	■		▒	■	■
Peggle		■				■		▒	■			■	■			■	■					■	▒	▒		■
BookW		■	■			■	■	■			■	▒	■	■	■	■	▒	▒		▒	▒	■			■	■
Konga					▒			▒			■	■				■	■					■		■		■
Samba		■			▒			▒			▒	■				■	■			▒		■				■
Wario		▒	■					■		■	■	■				■	■	■	■		■	■	■	■		
HoTDO		■					▒	■		■	▒	■	■	■	▒	■	■					■	■	▒		
J2:HIN				■	■		■	■			■	■		▒	▒	■	■	■	■	■	■	■		■		
bTrain							■	■		▒		▒			▒	■	■				■	■		■		■


Title
Re
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NPC
SpP
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Rep
Sc
PoU
It
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SaL
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LvH
Pi
Ca
Ti
Di
CrH
Spd
Si
Co
BigBrain
DrillSp
NintDog
ZooKeep
RubRab
Qbert
Fear
DQ8
WC3
Movie
VT3
MonkeyI
SF2
Lemm
SupMG
Dirt
Fville
Trivia
Scrabble
BeJewB
ZumaB
WordCh
SpotDif

10.2 Questions Raised

During the testing process a number of questions were raised about how the common forms relate to these games and what insights they might give. This section lists the questions that emerged whilst the following sections aim to answer these questions through reasoned argument and debate.

- Can the usage patterns of common forms be somehow related to game quality in terms of depth of gameplay or quality of player experience?

- Are games with few common forms particularly poor quality and hence do games with a higher common form concentration necessarily offer a higher quality gaming experience?

- Can number of common forms be related to age of game? (as many older games tested had relatively few of the common forms, older games will lack certain common forms by default e.g. save/load)

- As the model was built up from investigation of home console and computer games, is the model less effective at representing alternate platforms e.g. arcade-based titles, casual / social etc?

The following sections offer a critical appraisal of the questions above using evidence from testing and other sources to explain the relationship between common forms and games tested, ultimately evaluating utility of the model in testing games of these types.

10.3 Type Specific Observations

10.3.1 Classic and Arcade

Older titles from the early days of arcade and home computer gaming such as Frogger, Space Invaders, Manic Miner (Bug Byte, 1983) etc tend to lack level selection and save game features, although some arcade titles were able to maintain high score tables, there was no concept of recording ones progress. Furthermore, text adventures and early games may not have colour, precluding the presence of a colour system. There are well known technical reasons for this such as limited graphical capabilities, high price of memory and limited processing power of early systems. In addition, many early games only had a single level design, later levels simply featured faster enemies and/or extra hazards to avoid. Pacman, Space Invaders, Centipede (Atari, 1980) and many early games follow this template.

Earlier videogames, Tetris particularly, seem to demonstrate that it is not possible to prove an absolute linkage between common form usage and game quality. Tetris is widely perceived as one of the most popular and best videogames of all time, still winning prestigious awards and ranking highly in the 'best games' lists (Tetris, 2010) and selling more than fifty million copies (Breukelaar et al, pg42, 2004). Yet it uses no more than five out of the twenty six common forms tested for. Whilst early classics such as Space Invaders, Breakout (Atari, 1976) and Frogger have, debatably, aged to the extent they can no longer compete with modern releases, Tetris is regarded as a timeless classic and still played widely today, where as many of the arcade classics are not.

In summary, common form presence cannot reliably inform on the quality of any particular game, although it is argued that they can give insight into the sophistication of the game and its systems. The example of Tetris given enforces this, Tetris is an elegant and simple game, and the simplicity of the core game concept gives it much of its charm. Therefore, games with higher number of common forms can potentially offer more varied and lasting gameplay, although actual quality still depends largely on how well the game's systems are executed in practice.

10.3.2 Casual Games and Facebook

Nearly all twitch based games (Bejewelled Blitz, Zuma Blitz, Spot the Difference etc) have tight time limits of around one minute. Presumably, to ensure these games are easy to get into and can fit into the demands of working life and travel i.e. one may have only a couple of minutes to fill. The imposed short game time ensures all players have chance to complete at least one game and thus can have their score saved and compared to friends. Difficulty, a fundamental part of mainstream gaming, is weak and nonexistent in many facebook games. The possibility of progressive difficulty or level progression tends to be seriously truncated by the extremely tight time limit many Facebook games have.

In some games e.g. spot the difference, levels are randomly generated and the player has no choice in the level (picture) they get. Games like Bejewelled Blitz (Popcap, 2009) and Zuma Blitz (Popcap, 2010) are similar in that power up and tile placement is random but the starting level is otherwise identical each time the game is played and none of these games have level select, as the game time typically does not allow for significant progression or multiple levels. All games provide a game-room, where the player can post news such as unlocking a special item, reaching a new high score etc onto their facebook wall.

The most popular Facebook game is Farmville (Zynga, 2009) with an amazing 80 million players' worldwide (Poole, pg 122, 2010). Farmville has very tight social integration with facebook, which prompts you to post news on practically any game achievement to yours (and others) facebook wall. Furthermore, there is a vast inventory of items and livestock the game keeps track of, almost any of which, you can ask facebook friends to send you in what's known as a 'gift'.

However, the game lacks any kind of twitch gameplay. It might be likened to a simulation, with all actions carried out by clicking relevant icons. However, the tiny starting plot of land severely limits potential for creativity and it lacks challenge as the majority of items can be found e.g. lost animals or received as gifts. Crops planted grow, animals have milk, wool, eggs etc to be collected and trees grow fruit, all without player input i.e. the player does not have to care for animals, crops, trees and plants.

Essentially, the game lacks any kind of failure state. Whilst this undeniably makes it appealing for new or novice players, it also makes for an uneventful game. Indeed, in his critique, Poole (pg 122, 2010) also elaborates on the more cynical aspects of Farmville, where players feel obligated to log-in, not because of the (minimal) gameplay but out of politeness, to return favours e.g. because other users have helped on their farm or sent them gift items.

One can invite friends to try games they have not yet played and for all friends who already play, their high scores are listed with your score. Friends recommending games to each other is one of the most common ways people find new games on facebook and manage to sort the better games from the (many) poor ones.

Whilst all Facebook games are free to play, many of them allow a player to either buy an enhanced (full) version of the game as is the case for Bejewelled Blitz and Zuma Blitz or else (more commonly) as for Farmville, buy special items, upgrades, or power ups, that enhance the game or make progression easier and/or faster. Whilst this is clearly a lucrative business for developers, many players who cannot afford to pay or simply don't feel they should have to (facebook games already have advertising) may resent the game being skewed in favour of paying players.

Indeed, many facebook games can be likened to the recent evolution of the free to play MMORPG, where the basic game is free, but new quests and many of the best/most effective weapons and items have to be purchased. Perfect World International (PWI, 2011), provides a good example of how the 'free to play' model can work effectively by granting the player full access to the complete game and all quests. However, the player can speed progression by purchasing the game currency (zen) as opposed to earning it more slowly by completing game objectives. Nevertheless such models always favour paying players, e.g. they can get the most effective weapons and equipment more quickly, which some non-paying players are likely to resent.

Finally, an interesting revelation is that facebook games seem to share many fundamental characteristics with classic arcade titles such as Space Invaders or Pacman. For example both have limited (or no) save system, typically only high scores are recorded, both too have heavily simplified gameplay mechanics e.g. very short average playtime per credit, gameplay limited to a single screen, single level design with only minor variation between levels. Both also have simple and functional graphics i.e. none of the visual spectacle common on modern mainstream titles. Score has already been considered but remains one of the strongest chains linking this oldest and newest type of game. With classic arcade titles, many arcade goers of the time feel that much of the appeal of those games was getting to the top of the high score table, or at least getting a position on it.

Facebook games appear to simulate this through the importance and prominence score enjoys, almost universally within facebook games. Score is always displayed prominently, it is always recorded, even if the game saves no other player statistics and the player can always see their position in a high score table of their friends and a (much larger) worldwide high score table. It is a metric to allow players to compare their performance to that of their friends or even across players worldwide. Having the highest score of all ones facebook friends, could be seen as an analogue to having the highest score on a machine at the local arcade in the seventies and eighties.

10.3.3 The Fundamental Common Forms

The chart below (Fig 225), details the instances of each common form found in the games tested, provides an at-a-glance indication of the popularity of the common form and essentially reveals how fundamental each common form was to the games tested.

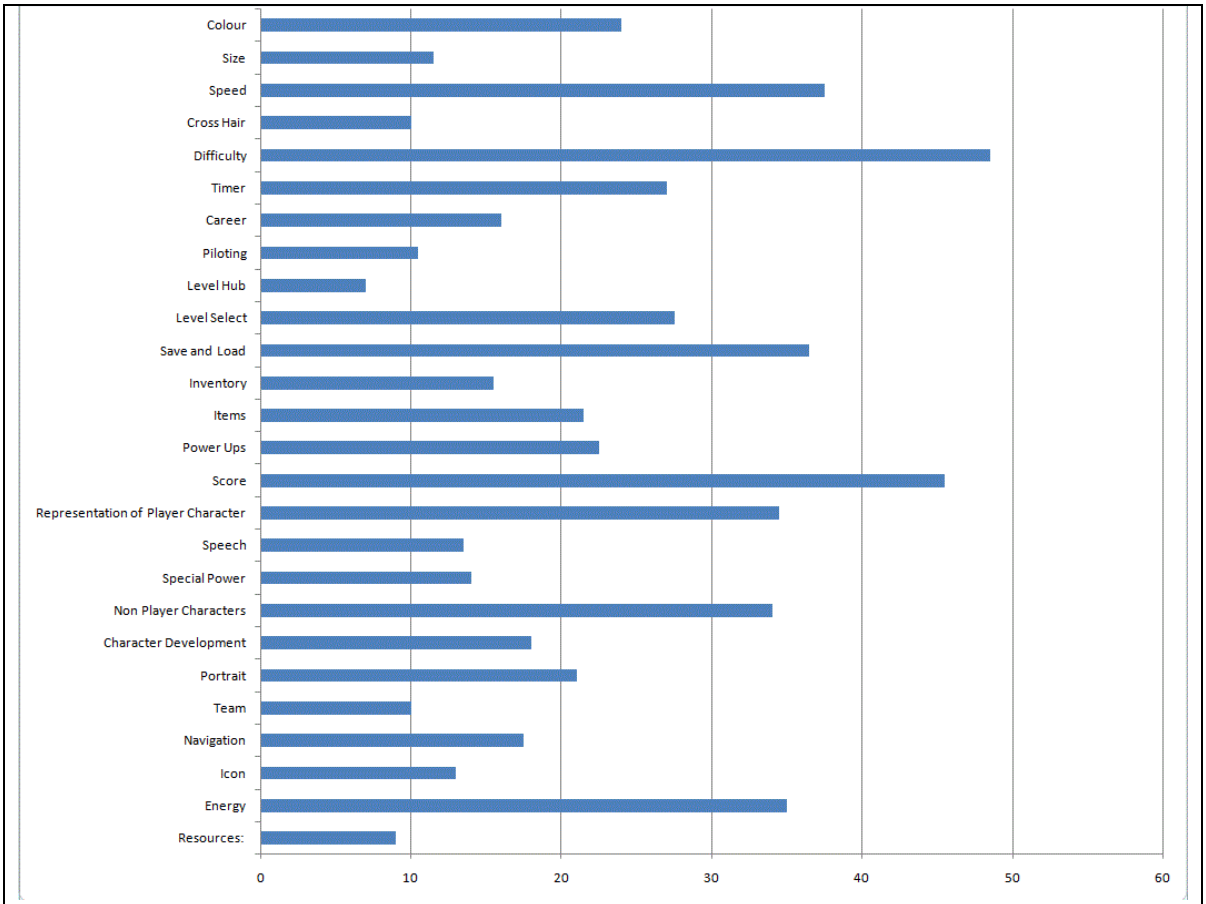


Fig 225. When calculating totals black (full presence) was equal to one point whilst grey (optional participation) was equal to half a point.

Figure 225 shows, despite forty years of active development, videogames really haven't changed that much, the most common parts of the videogames investigated remains difficulty and score, two fundamental building blocks they had since inception. Of course, one must understand the games in this chart where chosen specifically not to be representative of mainstream games considered throughout the earlier portions of the thesis.

Next is energy and speed. It was surprising that energy was not even more common considering its universality in mainstream games. Save and load options also have similar prominence which is interesting considering this investigation focused on classic games and casual games both of which are typically very limited in game save options. Saving of high score data was awarded a half point as partial presence.

Representation of player character and non player characters also achieved high prominence. This is unsurprising as, apart from strategy and simulation games, which were largely absent from the investigation, all games tend to represent some kind of player controlled character, whether it is human, animal or machine.

Level hub was least common, which may be because, typically, such features tend to be restricted to large, expansive 3D exploration based titles, platform games particularly. As this study focused on casual and niche genres, these titles were largely absent. Next was resources, which is unsurprising as this form is seen most clearly within strategy, RPG and simulation games which were largely absent in the investigation.

Crosshair and team were both unpopular too scoring just ten points each. Both common forms (crosshair particularly) tend to be seen most commonly in mainstream genres, in particular, the FPS. Furthermore, the crosshair is often reserved for 3D, first person perspective games but the majority of titles investigated were casual or pre-dated full 3D display.

10.3.4 Limitations of the Model

This section deals with situations in which the model does not portray the contents of the game fully or very effectively. This could be for any number of reasons e.g. game has very few of the common forms chosen for the model, hence the model does not offer us very much insight into the nature of the game. Whilst it is technically possible to plot any game on the model in terms of common form usage, by testing a selection of games that are, in some cases, outside of the traditional definition of a game, it has become clear its ability to describe the contents of games is somewhat variable when used outside of the types of games it was intended for i.e. mainstream console and computer titles.

An example already identified is Tetris, which had just five common forms. Next one must consider why the model has difficulty in representing games like Tetris. Perhaps the games which cannot be represented well use unique common forms, which were not chosen for the final model. As the genre specific common form chapter (chapter 8) demonstrates, there are potentially hundreds of different common forms possible, and it is only to be expected that some will be more appropriate for describing the content of a particular game than others.

However, one should not necessarily blame an apparent lack of identified common forms directly on the model being used. Instead, it is important to consider the game being evaluated, perhaps the lack of common forms simply relates to the inherent simplicity of the game and the lack of features more traditional gaming experiences share.

Common forms were chosen for the model based on presence over the widest cross section of games i.e. the most popular common forms were chosen. Of course, this criterion alone does not guarantee they will be appropriate in every situation, yet neither should one abandon them simply because they do not fit within certain isolated testing scenarios.

The model was developed using game examples from home computer and console games. Therefore, when used outside of this zone there will be eventualities that may not have been planned for. For example, many arcade titles have no reason to save progress, as the player can only continue for the duration of their credit, therefore the save data common form loses some relevance. Facebook games also mirror this trend as many of these are short and lack multiple levels.

Whilst arcade titles (on rails shooters particularly) do have level selection, this feature is lacking in facebook titles. Furthermore, level hub was absent from almost all titles tested, demonstrating it has little relevance in arcade or facebook titles. Even within mainstream titles its presence is limited to specific genres e.g. platform, demonstrating it may, have been a poor choice of common form, as less games than expected actually use it. Resources too tend to have very limited presence outside of mainstream games.

These results demonstrate that other models may be more appropriate for representing the contents of casual games on social networking sites, and other casual kinds of play experiences such as those encountered in an arcade. However, such results do not in any way invalidate the existing model, instead they simply inform of potential boundaries the model may have when used outside of its intended application.

If one was looking to replace existing genre classifications, it could be observed that the common form model developed is appropriate for the classification of mainstream gaming experience. However, perhaps it could be complemented by different models for casual games and perhaps another different model for (classic) arcade games. Such models need not necessarily start from scratch, they may simply instead populate the pyramid with different common forms which are more appropriate for describing the type of game the model is classifying.

11. Conclusions, Evaluation and Future Work

11.1 Summary of Pyramid Model

As discussed, modern games push genre to breaking point in trying to adequately describe the game's content. When five or six genres are needed to describe a single game, is it really still effective in communicating meaningful information about the game to the player? For example; Shenmue is an "action-adventure-beat-em-up-driver-RPG-movie" (Fencott et al [2], 2010).

The model presented provides a possible solution in providing an alternate way to visualise the contents of a game. Whilst, it would be inappropriate to consider this model a direct replacement to genre, it can be used as a complement or alternative e.g. perhaps for games that elude simple generic classification such as Shenmue.

The tiered pyramid model is the primary contribution to knowledge within the field. However, the unique presentation of the model in an application allowing manipulation and testing (see chapter 10) within a videogame-based context could be seen as furthering the model's uniqueness and in itself adding value to the overall contribution.

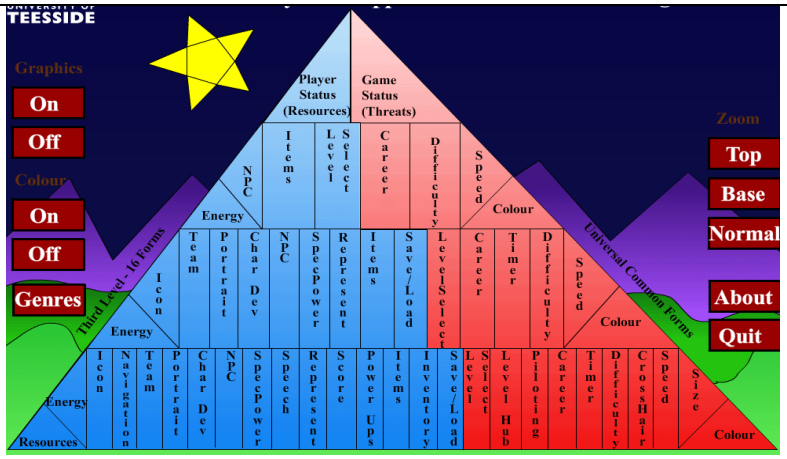


Fig 226. The screenshot above shows the final common forms model as it displays in the electronic pyramid application developed to support the model. The colour view shown highlights the player status common forms (blue) and the game status ones (red). For a complete account of the development of this application and its features, please see the Pyramid Application Development Report on the enclosed CD ROM.

The application succeeds in providing an accessible electronic version of the pyramid model and demonstrating its use over genres and games showing the models potential for use in real-world scenarios. To this end, the application is primarily a visualisation tool, for the existing content model. The model provides such visualisations in isolation of any other data or models. Whilst this has no impact on effective demonstration, it does mean currently there is no clear method of comparing results from pyramid model with other models or methods. Therefore future work involves investigation of how such comparisons might be enabled for improved usability and on a technical note, to allow validity of the model to be further tested.

Overall, the pyramid provides an effective, concise way to represent the common forms and graphically differentiate forms based on their level by using the concept of the height of their tier in the pyramid. Such effective graphical display minimises the need for textual description, reducing potential ambiguity. However, the pyramid model should be seen as providing relevant parts of the model for games categorisation whilst not providing the model in its entirety.

Indeed, there remain ‘hidden’ sections of the pyramid model whose influence remains somewhat ambiguous, by design. These levels exist at the extreme peak of the pyramid and conversely at its base. They are the concepts of game theory e.g. zero sum games etc that exist beyond the highest level of abstraction (player and game status) and the principles of semiotics (discussed in the literature review in chapter 2), the semiosphere and the relation of a signifier to its signified, which underpin the work of the entire thesis. These sections which exist beyond the models classification can be seen in the diagram below with a light grey background and bordered with a broken black line.

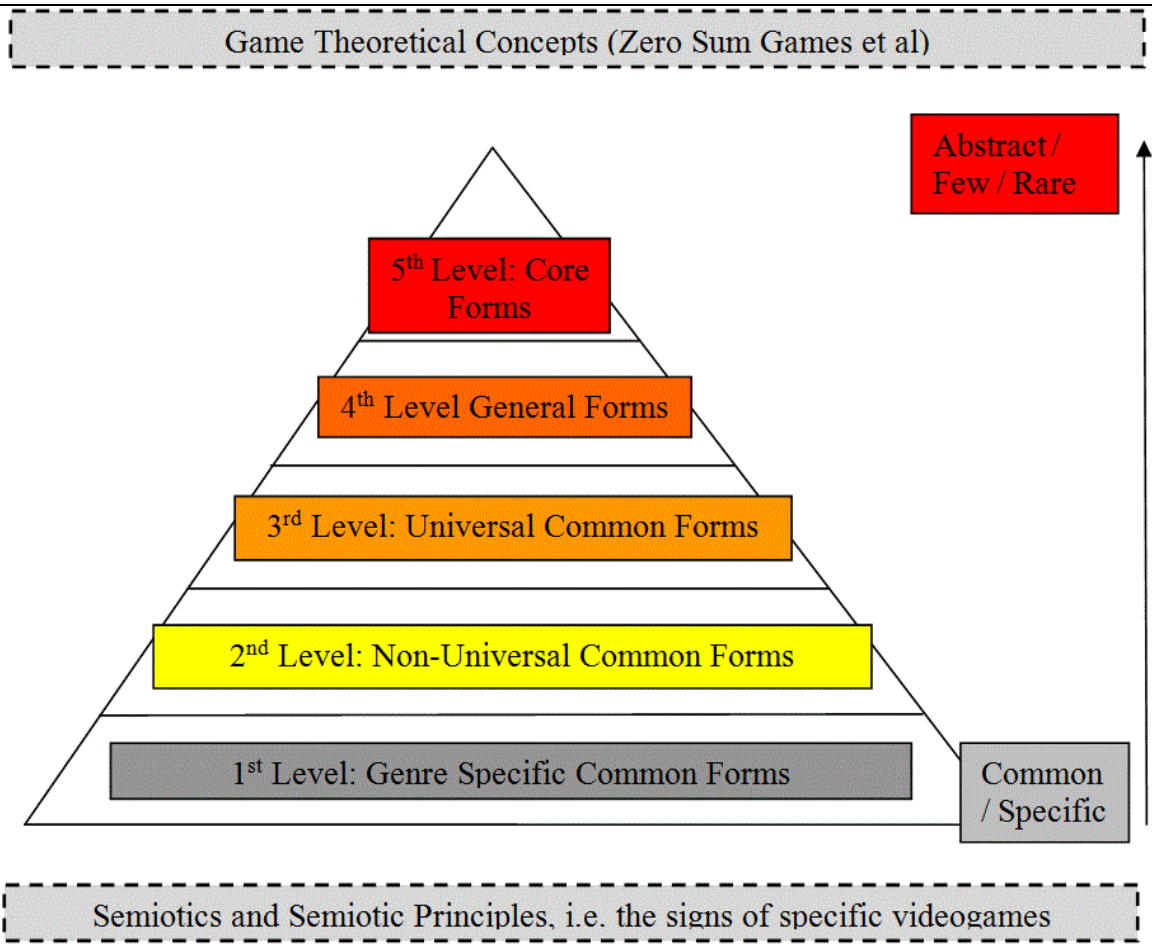


Fig 227. As well as five tiers depicted, there are two levels not depicted, these fall outside boundaries of model, yet remain relevant as foundation the model is built upon.

To best appreciate this model one should consider the increasingly sharp point of the pyramid tip as corresponding to the increasing abstraction of the common forms.

The pyramid model features five levels starting with genre specific common forms at the base, there are hundreds of these across genres, next are the twenty-six non-universal common forms, then those sixteen which were verified across the ten mainstream genres (see 1.6) considered in this study (the universal common forms).

Above this are eight newly discovered, generalised (major) common forms. Finally, at peak of pyramid are the two core common forms of game and player status, the most basic method to represent the contents of a videogame.

The summaries of each section of the genre specific common form investigation in Chapter 8 (unabridged chapter available on the CD ROM) demonstrate how closely a genre specific and universal common form are related and provides evidence reinforcing choices made. Furthermore, common form mappings, as seen in chapter 9: Common Form Relationship Modelling, succeed in generalising universal common forms identified ultimately culminating in a set of eight major (general) common forms generalised from the original sixteen universal forms and the relationships between these. The eight major or general common forms of the fourth level in figure 227 are:

1. (NP) Character
2. Difficulty
3. Energy and Status
4. Speed
5. Colour Systems
6. Items
7. Level Selection
8. Career and Story

11.2 Progress Review

When defining the scope of this study, two goals were set. These goals hinged on determining whether common forms exist in games and proving existence. The goals:

1. Determine what common forms can be seen amongst games of the same genre
2. Determine what common forms can be generalised across all gaming genres

A total of twenty six unique common forms of expression were identified and discussed and applicability across all major genres examined in depth. Eight of these, the major or general common forms, are discussed in the thesis (in chapter 5 and 6), whilst accounts of all twenty-six can be seen on the CD-ROM. Each form was scored to denote importance of the common form to the core game mechanics and gameplay. Throughout the entire thesis, great effort has been made to find example games to provide evidence that supports findings made. Indeed, many common forms have been discussed using real examples from commercially available videogames.

Whilst a considerable number of potential common forms have been identified, maintaining the presence of identified common forms across multiple genres is more difficult. As a result, only sixteen universal common forms of expression could be identified compared to the 120 common forms identified separately in each genre.

To allow common forms to emerge from genres other than genre of origin, it was necessary to generalise the common form somewhat i.e. to make assumptions about its usage. An example of this came when considering the representation of the player's character in the driving genre. In order to allow the form to demonstrate itself, certain assumptions were made based on the typical gameplay of that genre i.e. that the car would replace any character as the object of primary importance and hence was used as a 'stand in' for player character.

From this, a new term titled 'genre transference' was coined in chapter 5 (section 5.4.3 Genre Transference) where, when moving from one gaming genre to another, a change in meaning or scale can be observed such as the object of primary importance shifting from the player character (in a FPS game) to a vehicle in a driving game.

Nevertheless, all common forms identified remain valid instances, each providing valuable insights. The study has been a useful and largely successful piece of work that has succeeded in:

1. Proving the existence of many unique common forms of expression in videogames of a genre over each of the identified ten genres (see chapter 8: Genre Specific Common Forms).
2. Proving all twenty six common forms identified hold application both within and outside of the genre which they originated from. This means that all twenty six common forms can describe events of games from genres other than their own i.e. they have some level of cross-genre application (see chapter 5: Player Status Common Forms, chapter 6: Game Status Common Forms and CD ROM).
3. Proving a majority of common forms has application across all gaming genres (see chapter 7: Common Forms Identified).

4. Examining how genre specific forms combine into common forms (see chapter 8: Genre Specific Common Forms).
5. Examining how common forms combine into a subset of core common forms, resulting in the creation of the two major forms (player status and game status) (see chapter 9: Common Form Relationship Modelling).
6. Creating a tiered hierarchical content model for videogames incorporating common forms discovered, with an electronic support tool to aid visualisation (see chapter 9: Common Form Relationship Modelling and Pyramid Application and Development Report on CD-ROM).
7. Testing the model with a selection of games that fall outside of the original sampling criterion to measure the scalability and adaptability of the model (see chapter 10: Pyramid Model Testing).

11.3 Insights

The study has revealed how rich videogames are as a medium; even a single game makes use of many common forms. Indeed, even just a tiny component i.e. visual display or environment may make use of multiple common forms for its communication. The quality of the interfaces was also striking, particularly in RPGs which frequently use advanced, context sensitive menus whilst also presenting them in a manner which feels comfortable and natural for the player.

The work has given insight into how developers respond to game design challenges e.g. the different methods of controlling game difficulty and how these are used in practice. As a gamer, the author found it unsurprising how widespread traditional difficulty selectors are despite their flaws. However, it was encouraging to see good examples of adaptive difficulty systems continuing to emerge such as that seen in Super Mario Galaxy 2 (Edge, 2010).

Allied closely with difficulty, level structure was examined with a consideration given to how a game manages the division of content into discrete levels and stages and how such divisions can be highlighted, even in seemingly freeform gaming experiences. A good example of this was the RPG, which has no levels as such, yet it still sections the content using clear rules. The levels become dungeons and the world map and town become optional levels and a level hub respectively.

A constant theme connecting all common forms identified, yet a common form in its own right was colour, or specifically, colour systems used to enable instant communication of player status information, essential for action genres particularly, as colour is recognised before text or even images. By far the most common colour system was the three tone green, yellow and red. The most obvious application is health indication, where it is frequently used. However, colour systems, like difficulty and status representation, are a fundamental part of videogames and used in almost all game to player communication.

The study has revealed significant insight into modes of representation games of each genre favour, the relationship between abstract and direct modes of representation. In driving games, direct representations of real world gauges, controls and read outs are favoured with a rear view mirror, RPM, speedometer and temperature gauges recreated with accuracy. Meanwhile HUD of FPS relies more on representation through common aspects. It is interesting to question why games designers have to rely on such abstract concepts as a health bar to effectively communicate player status.

A major reason is that, in the real world, no clear visual manifestation of status or health of an individual can be seen other than visual and auditory cues observable directly. The player character energy level indication clearly does not have a real-world parallel, it is an unrealistic prop created entirely for allowing the game to communicate health effectively. As the study has demonstrated, games often make use of similar props or instances of unrealism to communicate abstract concepts and quantities.

The move to environmental health systems demonstrates developers are aware of how constant status bars compromise realism of the experience the game is trying to recreate. Yet, early games like Space Invaders, Pacman or Tetris, communicate status information elegantly with only the (basic) environmental graphics, there is minimal HUD and developers did not have to add extra 'status' effects (e.g. screen flashing red in Call of Duty 4 to signify damage). In Tetris player's progress can be seen, simply by how many blocks are within the play area, the filling of which, mimics emptying of a traditional health bar. In Tetris, the game effectively is the mode of status representation and status is communicated in a natural manner without need for environmental aids or status bars.

Whilst it would certainly be rash to assume the classic games were made to a higher standard or more thoughtfully designed, it is interesting to consider why early games can represent status in such an effortless manner, without an obtrusive HUD. One idea is there is direct connection between complexity of game environment and the complexity inherent in integrating player status information into it. In essence, it is far harder to embed status information into the realistic, complex environments of today's games than it was with the simple, single screen, play areas of classic games.

Finally, the study concluded by generalising all videogames down to two tightly related yet conflicting quantities of player resources (player status) versus game threats (game status). Player and game status can be related directly to the two master tropes of aporia and epiphany, investigated in the literature review in chapter two (2.2.4 Aporia and Epiphany). Aporia involves the encountering of problems and obstacles and therefore relates directly to game status, whilst epiphany involves the solving these problems using the limited resources at hand, player status. Therefore, the pyramid model reinforces work by Jorgensen (2003), which, asserts that videogame play is simply the constant conflict of aporia and epiphany. This is a further validation of the models status as an effective visualisation tool.

As noted when defining the scope for the investigation in chapter one (Section 1.4. Thesis Statement), the intention was to investigate videogames using both the rhetorical and literary definitions of the trope. This has been successfully completed, and beyond this, a possible linking of rhetorical and literary tropes has been found. Assuming the common forms identified can be considered valid literary tropes (within the field of videogames), then the aporia and epiphany tropes (the game and player status) present a potential linkage point at which the rhetorical master tropes (aporia and epiphany) connect with the literary tropes (common forms).

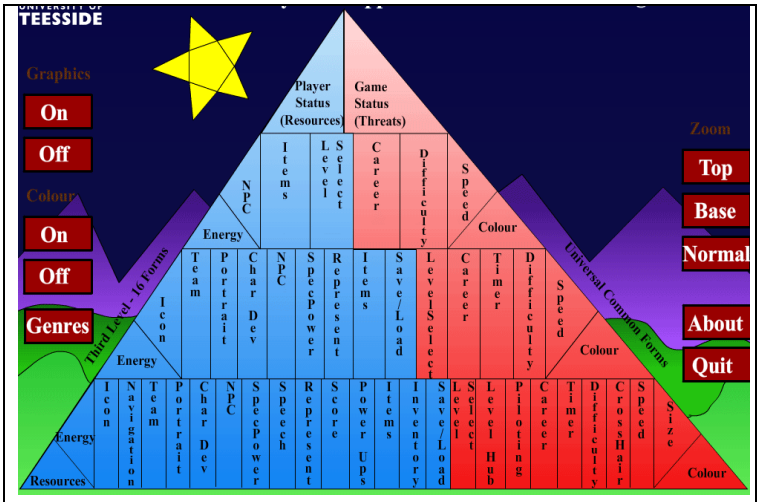


Fig 226. At the tip of the pyramid player status and game status relate to epiphany and aporia, whilst the hierarchies of common forms fan out from this top level, representing a connection between the rhetorical and literary definition of the trope.

Whilst division between player and game status is almost equal, closer examination reveals elements relating to player status (shown in blue above); resources player holds, always slightly outnumber the elements relating to game status (shown in red above), the threats or obstacles the game poses. It is interesting to consider this an overall description of a videogame in play. The player is provided with (only just) sufficient resources to overcome the challenges the game poses but will have to work hard and practice in order to do so. Therefore, one can observe the division point between game and player resources has relevance to difficulty level and whilst the above mapping provides an overall estimated modelling, the actual division of these two common forms will, in reality, be subtly different for each game.

Indeed, there can even be differences for the same game but at different stages of play. For example, the opening levels are likely to more generously apportion resources, such as health restoratives, than later in the game.

It is expected division between game and player status for any game will depend on a number of factors including: genre, platform, control systems, display technology and audience game is targeted at. In a game designed towards needs of a particularly young audience, or a very wide audience in the case of casual games, balance would be skewed in favour of accessibility. The player's resources vastly outnumber game resources, minimising the danger of becoming stuck early in the game.

A good example of games with this kind of player / game status balance is casual or 'family' games such as Bejewelled, Zuma or Peggle. Facebook games like Farmville, feature particularly extreme examples of this balancing. In Farmville, much of the traditional videogame challenges (game status) are missing completely and in its place is a (potentially) infinite chaining of social obligations and conventions.

Facebook games with some degree of twitch factor e.g. Bejewelled Blitz or Zuma Blitz, actually share most of their qualities with early arcade titles e.g. the level of importance assigned to score which is quite rare in mainstream games, barring the online FPS game e.g. Quake. The games recreate the social competition of moving ahead of a friend in the leader board or even becoming the world champion. The simple friends and worldwide leader board transforms, what would otherwise be dismissed as very simple games, giving them (almost) limitless replay value for competitive players.

11.4 Model Comparisons: Directions for Future Work

A detailed study has already been completed and has succeeded in the outlined objectives of determining the presence of common forms of expression and demonstrating their applicability to the field of videogames in general. However the huge body of videogames available, now spanning over forty years, over hundreds of platforms and of many genres and sub-genres means avenues for additional work are always open. Therefore, this section will briefly revisit the videogame models considered in the literary review evaluating the common form model against them and considering the interactions possible between the models and revealing possible avenues for future work related to this research.

As discussed in the literature review (chapter 2), this model owes a lot to the works of Fabricatore's (2002) Playability in Action Videogames Qualitative model and Fencott's Perceptual Opportunities model, fuzzy genres and the activity profiling seen in Strange Analyst.

11.4.1 Perceptual Opportunities

Like Fencott's (2003) Perceptual Opportunities, common forms can be used to appraise an individual game, or even a portion of player's experience of a game. However, there are also some key differences between these two models.

Perceptual opportunities focuses primarily on describing the nature of objects within the game environment and hence provides an excellent way to evaluate a videogame environment on the kinds of stimuli it provides and the intentions players form based on these. Common forms may relate broadly to events in the game environment but equally, perhaps more so, relate to elements of the games interface and HUD (Fencott et al [4], 2010).

Attractors	Connectors	Rewards
NPCs (Mystery, Desire) Intention: make sure they are friendly	Basic navigation controls	Activity is observe (peripatetic) Reward is 'connectors' to help complete mission

Fig 6. The table above details a sample of gameplay, using perceptual opportunities, from the videogame Unreal Tournament, where NPCs are encountered for the first time.

Furthermore, perceptual opportunities is a player centred model, which offers a number of emotion-imbued terms to describe game contents and events e.g. the concepts of 'fear' and 'desire'. Although these aspects were considered in its development, the common form model could be considered more technical and less related to player emotional response to game stimuli (Fencott et al [4], 2010).

In summary although similarities exist between the two models, in reality there is nothing substantial connecting the two models and as such they could be considered orthogonal to each other.

11.4.2 Strange Analyst and Activities

Strange Analyst features an extensive database of games, each classified according to the degree to which they feature 49 unique activity types. Therefore each game can be expressed in terms of a balancing of these 49 activity types. Each activity relates to something the player can do in the game environment. For example, a strategy game might feature high levels of the 'building' and 'capturing' activities whilst a RPG might be more concerned with 'collecting items' 'character development' and 'communicating'. Those involved in games design or development could even put forward their own game idea in terms of the balancing of these 49 activity types and compare their concept to existing games with a similar profile (Fencott et al [1], 2006).

Whilst the model developed in this study never achieved the same degree of maturity and sophistication that Strange Analyst did, there are clear links between how Strange Analyst classifies games according to the activities they feature and the classification of games by their common form usage. Their purpose also overlaps in that both models allow a far finer categorisation of game content than traditional genre; the models simply differ in the way this is achieved. Strange Analyst categorises game activities and is clearly a model focused towards assisting future game development, yet can equally be used to investigate current games (Adams, 2006).

The common form model categorises games based on aspects that multiple games have in common (across genres). Unlike Strange Analyst, these aspects are not activities, they are less about what the game character, or even the player is doing and instead is more focused on the overall game as a system of signs to investigate. Common forms might be likened to game elements, or the component parts that make up the whole game e.g. the game timer, the energy bar but can also include wider, overarching design elements like colour schemes. The model is less development focused than Strange Analyst and instead more concerned with providing a more effective categorisation of game contents than genre permits.

Nevertheless, the potential certainly exists for the models to be used together. This could simply be the usage of one model inside another e.g. a game might first be classified according to the common forms it uses, then one might try to establish which activities relate to a specific common form. For example the activities 'confronting' and 'attacking' can both be related to the NPC common form.

Of course, conversely there are also respects in which the Strange Analyst model might be considered less advanced than the common form model. One of the biggest differences is that the Strange Analyst model is a ‘flat’ model in that activities only exist on one level i.e. the model has no hierarchy unlike the common forms model. The common forms model uses hierarchy to control abstraction of the common forms and hence features several distinct classifications of common forms, each one valid in its own right albeit at a different level of abstraction.

Each abstraction level gives a different set of common forms (although some carry up into the higher levels). Therefore, whilst it is possible to vary the dimension of abstraction in the common form model, perhaps to see how a games common form usage varies between high and low levels of abstraction, this cannot be done with Strange Analyst. Instead Analyst features a fixed set of activities but allows different scores to be assigned to each to describe a game’s content.

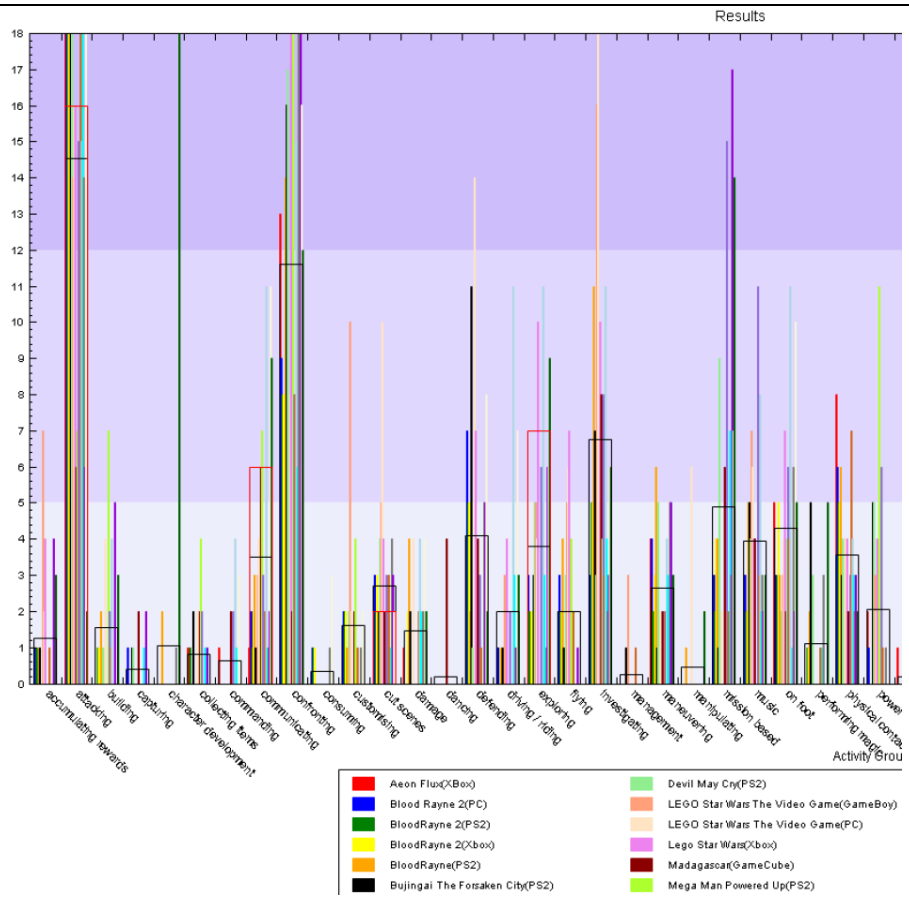


Fig 228. Screenshot from Strange Analyst (Fencott et al [2], 2006) demonstrates how the software graphically depicts the extent to which each activity exists in each of the games chosen for investigation (the box at the bottom).

The graphing methods of strange analyst (as seen above) allow fine distinctions between the levels of presence one activity enjoys over another. The addition of unique colours for each game makes direct game-to-game comparisons straightforward. Similar methods of visualising common form presence may well enhance the utility of the model and streamline game comparisons.

The main benefit Strange Analyst enjoys over the common form model developed is an extensive database of more than ten thousand game activity profile visualisations that can be loaded at any time and compared against other games or game concepts. Integrating this functionality with the visualisation tool would undeniably improve its functionality. Nevertheless, this is merely a technical implementation difference between the two systems and does not reduce the value of the actual model or its theoretical contribution.

In summary then, the common form model undeniably shares more with Strange Analyst than any other games related model. Both models present different solutions to the same problem. Analyst takes a more divergent approach to the problem presenting a more ‘open’ or creative solution, whilst the common form model is more convergent in nature, this can be seen particularly in how model recognises the value of familiarity and preserves data collected for future application. Therefore, neither model should be labelled as ‘right’ or ‘wrong’ nor ‘better’ or ‘worse’. They represent different ideas and creative processes and different modes of thinking (divergent and convergent). Nevertheless, just as divergent and convergent modes of thinking complement each other, so too do the two models (Cropley, 2006).

One could consider Strange Analyst and the Common Forms model as being interdependent to each other in that they each exist independently; yet share a number of key points with each other.

11.4.3 Immersive Dimensions

Like Molina's representational dimensions, that provides a graduated scale, on which, the immersion of game (and other virtual) worlds can be charted, the model provides a number of unique views into the nature of videogames in its multiple hierarchies. In Molina's model it is the dimensions which scale up or down depending on the source, with the world we perceive around us considered the truest possible representation. Although the subject matter differs, the current model shares the basic concept of reacting to the needs of the situation with scalability.

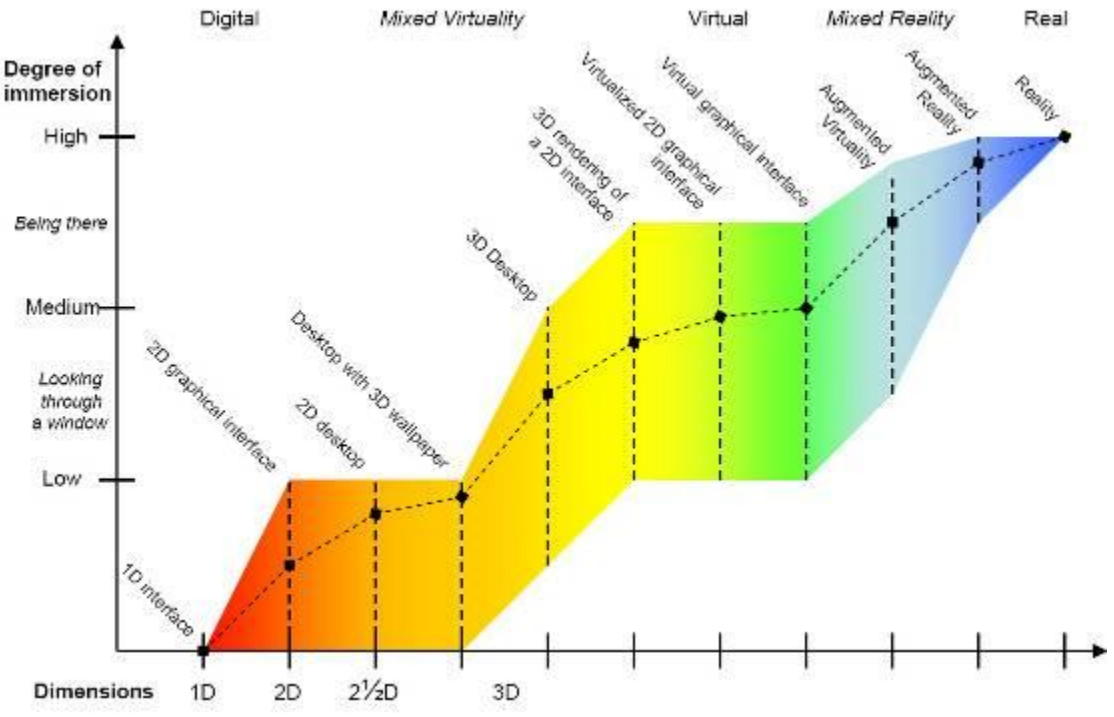
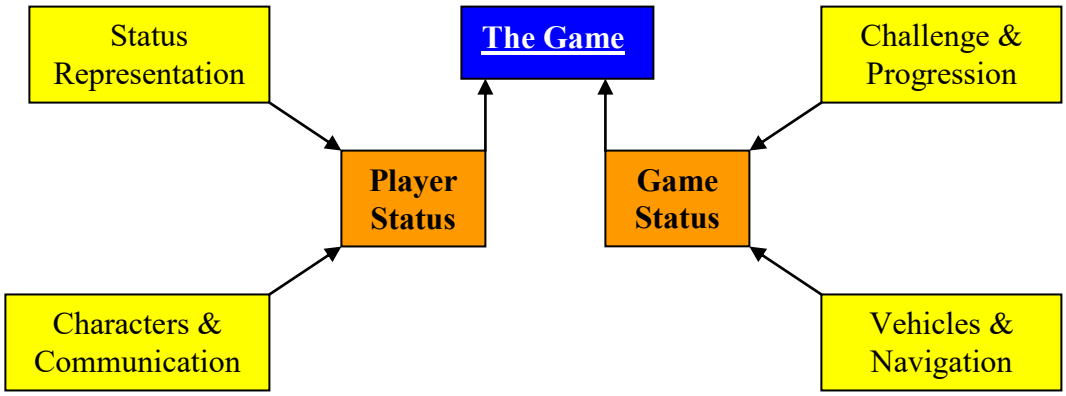


Fig 8. Molina (2007) presents a graph plotting dimensions of representation (x-axis) and immersion (y-axis) demonstrating the increased immersion additional dimensions of representation bring. Immersion must be balanced with practicality and usability.

Indeed, if the model were plotted in two axis as Molina's degree of immersion diagram is above, one would plot the interactions between the player resources (player status) and the game challenges (game status) as the basic, digital interplay of any games systems. This is the most basic and generic representation, at the heart of the game as figure 217 (below) demonstrates.

Fig 217. Two Master Tropes



Meanwhile, as one descends the hierarchies of common forms more precise terms are reached which better facilitate the description of an individual game's components. Therefore, the reality of a shooting game might be a complex array of elements like 'score', 'timer', 'NPC' etc interacting to create a believable game environment and experience.

Despite basic similarities, the common form model and Molina’s degrees of immersion are fundamentally quite different models and do not have much in common. They might be considered orthogonal to each other.

11.5. Future Work

11.5.1 Additional Common Forms

Whilst the common forms the model features do take account of the majority of videogame features, on reflection there is one aspect of videogames the model has failed to consider at all and that is game audio. Modern videogames feature very advanced audio design and usage of positional surround sound audio is now standard with audio quality and sophistication approaching feature-film levels.

Audio acts as a reinforcement to the visual display, it could be as simple as the ‘blip’ sound when the player hits one of the alien invaders in Space Invaders or the powerful ‘boom’ of a shotgun firing in just about any modern FPS game. Indeed audio reinforcing power-up and item collection is common but it can also warn of approaching dangers such as hostile enemies, other race drivers, environmental dangers etc. However, audio is more than just sound effects, music sets a mood and adds context to any scene. Perhaps the best examples of this are the chilling tunes of survival horror titles like Resident Evil where music inspires sensation of tension and unease in players. Indeed, effective use of music can conjure just about any emotional response in the player.

Likewise speech helps one to connect to on-screen characters, imbuing in them a specific personality depending on the connotations of their intonations e.g. a detective with a deep, gravelly voice in an adventure game would help to ground the game in reality, offering a sense of familiarity.

Though undeniably a fundamental part of videogame design, as stated in the introduction (section 1.6), audio was not considered at all within this research.

11.5.2 Titling and Classification Improvement

When assigning a title to a newly discovered common form, or abstracting upwards from genre specific common forms it was often very difficult to chose a title that could succinctly describe the form whilst also having adequate meaning for others to effectively use the model. There was also a constant conflict of abstraction versus utility i.e. arriving at a level of abstraction that allows for a compact and functional model yet still allows for sufficient insight into videogame contents.

There were also cases in which it was quite hard to separate common forms from each other and making the distinction between a unique common form and a subset of another form. This is the issue this section aims to address. Perhaps the most controversial common form choice in the model is colour.

After consideration there are a number of issues with its placement in the model:

- Colour is actually a part of virtually all visual components of the games systems.
- As a result colour is also a part of many of the common forms identified; therefore it is a component of other common forms.
- Colour is itself too general a term for meaningful insight e.g. colours could be seen in any games which has visual communication.

Despite the issues raised, the problem is more with the overly general title of ‘colour’ than with its inclusion. A more appropriate term would have been the use of identifiable colour systems for communication. Indeed, in the evaluation the presence of colour within a game is rated according to the presence of colour systems within that game and their level of sophistication.

The main argument encountered regarding the categorisation of colour as a common form is colour really should be considered as merely a part of health and status representation. However, this would be an oversimplification as colour does portray far more than just the player’s status e.g. it often aids effective navigation in racing and rallying titles. Artistic explanations of colour and colour theory have not been considered because they lie beyond the scope of this research.

11.5.3 Context of a Hybrid Model

This section uses the discussion of the previous section, in which a range of videogame models were evaluated against the common form model, with the intention of moving forward towards a single 'chosen' hybrid model. This model would combine parts of the emergent common forms model with one (or more) existing, established models. The reasoning behind this is to reinforce the overall core value of the model and tackle some of the weaknesses of the existing model. The goal this work might realise is arriving at a proposition likely to be of greater interest to other researchers and academics working in the games industry, videogame journalists or even videogame developers themselves.

Of course, one should also not underestimate the value such a model could hold in college and university educational settings to enable students to plan their game concepts but also to analyse significant successes and failures of the past. At more advanced levels, i.e. late degree to postgraduate, interested students could even be allowed to further test and validate the model to discover weaknesses and (ideally) prove the model robust and suitable for use within and beyond academic purpose.

From the previous section, one can highlight Strange Analyst (discussed in section 11.4.2) as having most in common with the current model and offering the greatest potential for future development with the model. Indeed, Strange Analyst holds many of the features key to developing the Common Forms application further and overcoming its limitations as a prototype. Strange Analyst features an extensive database of more than ten thousand games allowing any activity profile to be viewed on-demand via search or filter / selection criterion.

The lack of a database or live game search and selection features is one of the most serious limitations of the current model and must be remedied for the model to be taken more seriously in a games development or research context.

11.5.4 Hybrid Model Proposal

There are a number of ways in which the common forms model might be partied with other models for a hybrid model. This section simply aims to choose one of these possibilities and describe it in some more detail.

Developers could initially plot out the activities a game concept might have using the technology already provided by Strange Analyst but then to create an on-screen prototype of the game by choosing a traditional genre and relevant common forms and presence levels for the game. More advanced features which could be added to the hybrid model might include the ability to define and describe relationships within the model which could be of three possible types:

- Relationships between activities
- Relationships between common forms and activity and
- Relationships between genre, common form and activity

Working in these three related dimensions of genre, activity and common form, requires greater cognitive engagement on the part of the participant to (with the help of the software functions) ensure that meaningful and complementary groupings and relationships are made and that these are representative of the original concept description.

The cognitive thought and mental process of associating common forms to activities and then attempting to relate this conceptual collection of activity and common form to one or two primary genres facilitates some basic decision making which is helpful in narrowing the scope of the game concept and filtering the vast idea pool to simply those which are relevant to the game concept.

Therefore, the proposed idea would afford game developers a three-dimensional space in which game concepts could be plotted. The game would be defined in terms of its:

- Common Form Usage
- Activity Usage
- Primary Genre

Indeed, developing this concept further may even reveal a place for Fencott's Perceptual Opportunities to further enrich this hybrid model. This is important as the integration of this model enables a degree of subjective aesthetic evaluation which might otherwise not be possible, a human element to complement the data gathering and plotting. The first stage is where an effective balancing of activities, common forms and genre is chosen. This stage would offer a range of options, in the software, including the ability to:

- Compare the created profile to past game profiles.
- View alternative or suggested activities or common forms based on previous (successful) game profiles.
- Enable rules which can check the proposed concept is feasible e.g. that conflicting sets of activities, common forms and genres have not been chosen.
- Display a list of titles with similar profiles.
- Display release information and review scores for relevant titles.

However, the second stage, possibly with the help of basic storyboarding tools and some established visualisation tools such as Flash for simpler 2D games or a 3D modelling interface for more complex 3D titles, would go much further to attempt to describe a very brief glimpse of gameplay in the proposed game concept. From this, the potential emerges to use an aesthetic model such as perceptual opportunities to describe the emergent game concepts and quantify, to a degree, what the subjective game player's experience might be.

The tool could allow the user to save the perceptual opportunity profile of a number of successive 'journeys' through the conceptual game environment e.g. by each member of the development team for future comparison. Furthermore, the application could hold past perceptual profiles of previous game concepts and even complete games and offer similar comparison capability to the main application. However, the subjective nature of perceptual opportunities must not be forgotten, hence they are not directly comparable, unless the evaluation is performed by the same person in each case.

This whole process, but particularly the perceptual opportunity mapping of the final stage, could easily be performed iteratively over the course of the development cycle to ensure that the vision of the original concept is not lost sight of e.g. to the hardships of financing development and the demands of other projects.

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The table below provides release date and developer information for all videogames used in the examples given. This listing includes games where screenshots were used plus games simply described in the main text. This information allows fellow researchers to find full reviews and analysis of these games online and provides sufficient information for purchasing of these games should they be needed for follow up study.

Videogame References List				
Shooter and First Person Shooter				
No	**Title**	**Publisher**	**Developer**	**Date**
1	Call of Duty	Activision	Infinity Ward	2003
2	Call of Duty 2	Activision	Infinity Ward	2005
3	Call of Duty 4	Activision	Infinity Ward	2007
4	Unreal Tournament	Atari	Epic	1999
5	Unreal Tournament 2004	Atari	Epic	2004
6	Unreal Tournament 3	Midway	Epic	2007
7	Far Cry	Ubisoft	Crytek	2004
8	Far Cry 2	Ubisoft	Ubisoft Montreal	2008
9	Crysis	Electronic Arts	Crytek	2007
10	No One Lives Forever 2	Sierra	Monolith	2002
11	FEAR	Sierra	Monolith	2005
12	Doom	ID Software	ID Software	1993
13	Doom 3	ID Software	ID Software	2004
14	Halo	Microsoft	Bungie	2002
15	Prey	2K Games	3D Realms	2006
16	Painkiller	Dreamcatcher Interactive	People Can Fly	2004
17	Medal of Honour: Allied Assault	Electronic Arts	2015	2002
18	Serious Sam 2	2K games	Croteam	2005
19	Resident Evil: Umbrella Chronicles	Capcom	Capcom	2007
20	Resident Evil: Darkside Chronicles	Capcom	Capcom Cavia	2009

21	Half Life 2	Vivendi Games	Valve	2004
22	Quake 4	Activision	ID Software	2005
23	Metal Gear Solid	Konami	Konami	1998
24	Max Payne 2: The Fall of Max Payne	Rockstar	Remedy	2003
25	Hidden and Dangerous	Take 2	Illusion Softworks	1999
26	Mafia: The City of Lost Heaven	Take 2	Illusion Softworks	2002
27	Virtua Cop	Sega	AM2	1994
28	Virtua Cop 2	Sega	AM2	1995
29	House of the Dead	Sega	Wow Entertainment	1997
30	Time Crisis	Namco	Namco	1995
31	Goldeneye (N64 Original)	Nintendo	Rare	1997
32	Counter-Strike Source	Valve	Valve	2004
33	Starfox	Nintendo	Argonaut Software	1993
34	Panzer Dragoon	Sega	Team Andrmeda	1995
35	Galaxian	Atari	Atari	1983
36	Space Invaders	Taito	Taito	1977
Sports				
No	**Title**	**Publisher**	**Developer**	**Date**
37	Virtua Tennis 3	Sega	Sega	2007
38	Wii Sports	Nintendo	Nintendo	2006
39	FIFA 2006	Electronic Arts	EA Canada	2005
40	Mario Tennis: Power Tour	Nintendo	Camelot	2005
41	Mario Golf: Advance Tour	Nintendo	Camelot	2004
42	Tiger Woods PGA 2007	Electronic Arts	EA Redwood	2006

43	NBA Basketball 2007	2k Sports	Kush Games	2006
44	NHL Ice Hockey 2007	Electronic Arts	EA Canada	2006
45	The Aquatic Games	Electronic Arts	Millennium Interactive	1992
Puzzle				
No	**Title**	**Publisher**	**Developer**	**Date**
46	Tetris	Nintendo	Nintendo	1989
47	Columns	Sega	Sega	1990
48	Bust-A-Move 4	Acclaim	Cyberfront	2000
49	Puyo Pop Fever	Ignition Entertainment	Sega	2005
50	Dr. Robotnik's Mean Bean Machine	Sega	Sega	1993
51	The Lost Vikings	Accolade	Interplay	1993
52	Lemmings	Psynosis	Psynosis	1991
53	Lemmings 2: Tribes	Psynosis	Psynosis	1993
54	Lemmings (Remake)	Sony	Team 17	2006
55	Audiosurf	Valve	Valve	2008
56	Bejewelled Blitz	Popcap	Popcap	2009
57	Zuma Blitz	Popcap	Popcap	2010
58	Breakout	Atari	Atari	1976
Driving and Vehicular				
No	**Title**	**Publisher**	**Developer**	**Date**
59	Crazy Taxi	Sega	Sega (AM3)	1999
60	Daytona 2001	Sega	Amusement Vision	2001
61	Ferrari F355 Challenge	Acclaim	Sega (AM2)	2000
62	Gran Turismo	Sony	Polyphony Digital	1998
63	Gran Turismo 2	Sony	Polyphony	2000

			Digital	
64	Gran Turismo 4	Sony	Polyphony Digital	2005
65	Gran Turismo 5	Sony	Polyphony Digital	2010
66	Colin Mc Rae 04	Codemasters	Codemasters	2003
67	Colin Mc Rae 2005	Codemasters	Codemasters	2007
68	Colin Mc Rae Rally DIRT`	Codemasters	Codemasters	2007
69	Colin Mc Rae: DIRT 2	Codemasters	Codemasters / Sumo Digital	2009
70	Grand Theft Auto	Rockstar	DMA Design	1998
71	Grand Theft Auto 3	Rockstar	Rockstar North	2002
72	Grand Theft Auto: Vice City	Rockstar Games	Rockstar North	2003
73	Grand Theft Auto: San Andreas	Rockstar Games	Rockstar North	2005
74	Carmageddon	Interplay	SCI	1996
75	Twisted Metal 2	Sony	Sony	1996
76	Driver	GT Interactive	Reflections	1999
77	GTR 2	Simbin	Simbin	2006
78	Forza Motorsport 2	Microsoft	Turn 10 Studios	2007
79	Forza Motorsport 3	Microsoft	Turn 10 Studios	2009
80	Ridge Racer 7	Namco	Namco	2006
81	Project Gotham Racing 4	Microsoft	Bizarre Creations	2007
82	Outrun	Sega	AM2	1986
83	Outrun 2006: Coast to Coast	Sega	Sumo Digital	2006
84	Ford Street Racing	Empire	Razorworks	2006
85	Juiced: Hot Import Nights (HIN)	THQ	THQ	2007
86	Big Mutha Truckers	THQ	Eutechnyx	2002
87	Wipeout	Psygnosis	Psygnosis	1995
88	Need for Speed: Underground	Electronic Arts	EA: Black Box	2003
89	Need for Speed: Most Wanted	Electronic Arts	EA: Black Box	2005
90	Midnight Club	Rockstar	Rockstar: San	2000

			Diego	
91	Trackmania: United	Deep Silver	Nadeo	2007
92	Pole Position	Atari	Namco	1982
Real Time Strategy				
No	**Title**	**Publisher**	**Developer**	**Date**
93	Command and Conquer	Virgin Interactive	Westwood	1995
94	Command and Conquer: Red Alert	Virgin Interactive	Westwood	1997
95	Command and Conquer: Red Alert 2	Electronic Arts	Westwood	2000
96	Command and Conquer 3	Electronic Arts	EA Los Angeles	2007
97	Dune II: The Building of a Dynasty	Virgin Interactive	Westwood	1993
98	Age of Empires 2	Microsoft	Ensemble	1999
99	Age of Empires 3	Microsoft	Ensemble	2005
100	Starcraft	Blizzard	Blizzard	1998
101	Warcraft 3: Reign of Chaos	Blizzard	Blizzard	2002
102	Age of Mythology	Microsoft	Ensemble Studios	2002
103	The Lord of the Rings: Battle for Middle Earth	Electronic Arts	EA Los Angeles	2004
104	Pikmin	Nintendo	Nintendo EAD	2001
105	Commandos	Eidos	Pyro	1998
106	Commandos 2: Men of Courage	Eidos	Pyro	
107	Populous	Electronic Arts	Bullfrog	1989
108	Pikmin	Nintendo	Nintendo EAD	2002
109	Cannon Fodder	Virgin Interactive	Sensible Software	1993
110	Farmville	Zynga	Zygna	2009

Simulation				
No	**Title**	**Publisher**	**Developer**	**Date**
111	Caesar 3	Sierra	Impressions	1998
112	Sim City 2000	Maxis	1AM Productions	1993
113	Sim City 4	Electronic Arts	Maxis	2002
114	The Sims	Electronic Arts	Maxis	2001
115	The Sims 2	Electronic Arts	Maxis	2003
116	Black and White	Electronic Arts	Lionhead	2000
117	The Movies	Activision	Lionhead	2005
118	Theme Park	Bullfrog	Bullfrog	1995
119	Theme Hospital	Bullfrog	Bullfrog	1997
120	Rollercoaster Tycoon	Chris Sawyer	Hasbro	1999
121	City Life	Deep Silver	Monte Cristo	2006
122	Tycoon City: New York	Atari	Deep Red Games	2006
123	Railroad Tycoon	Chris Sawyer	Take Two	1993
Adventure				
No	**Title**	**Publisher**	**Developer**	**Date**
124	Broken Sword	Virgin Interactive	Revolution	1995
125	Broken Sword: The Sleeping Dragon	The Adventure Company	Revolution	2003
126	Broken Sword: The Angel of Death	THQ	Revolution	2006
127	Monkey Island	Lucas Arts	Lucas Arts	1990
128	Monkey Island 2: Le Chuck's Revenge	Lucas Arts	Lucas Arts	1991
129	Escape from Monkey Island	Lucas Arts	Lucas Arts	2000
130	Sam and Max: Hit the Road	Lucas Arts	Lucas Arts	1993

131	Sam and Max Season 1	Gametap	Telltale Games	2007
132	Sam and Max Season 1: Episode 4: Abe Lincoln Must Die!	Gametap	Telltale Games	2007
133	Sam and Max Season 1: Episode 5: Reality 2.0	Gametap	Telltale Games	2007
134	Sam and Max Season 2	Gametap	Telltale Games	2008
135	Manic Mansion	Lucas Arts	Lucas Arts	1990
136	Beyond Good and Evil	Ubisoft	Ubisoft	2003
137	Fahrenheit	Atari	Quantic Dream	2005
138	Resident Evil (Remake)	Capcom	Capcom (studio 4)	2002
139	Resident Evil 4	Capcom	Capcom (studio4)	2005
140	Toejam and Earl	Sega	TJ&E Productions	1991
141	Toejam and Earl 3	Sega	TJ&E Productions	2002
142	Tomb Raider	Eidos	Core Design	1996
143	Prince of Persia: The Sands of Time	Ubisoft	Ubisoft Montereal	2003
144	Super Monkey Ball	Sega	Amusement Vision	2002
145	Pacman	Namco	Namco	1981
146	Facade	Auto Mata	Auto Mata	2008
147	Dinner Date	Stout Games	Stout Games	2010
148	Crime Scene Investigation (CSI)	Ubisoft	369 Interactive	2003
149	Trauma Centre	Nintendo	Atlus	2008
150	Trauma Team (AKA Hospital)	Atlus	Atlus	2010
151	Phoenix Wright (series)	Capcom	Capcom	2003-2009
152	Sid Meir's Pirates (2004 Remake)	Atari	Firaxis Games	2004

153	Tomb Raider	Eidos	Core Design	1996
Role Playing				
No	**Title**	**Publisher**	**Developer**	**Date**
154	Vampire: The Masquerade: Bloodlines	Activision	Troika	2004
155	Zelda	Nintendo	Nintendo	1987
156	Zelda: Ocarina of Time	Nintendo	Nintendo EAD	1998
157	Zelda: Majora's Mask	Nintendo	Nintendo EAD	2000
158	Zelda: The Wind Waker	Nintendo	Nintendo	2003
159	Zelda: The Twilight Princess	Nintendo	Nintendo	2006
160	Suikoden	Konami	Konami	1996
161	Suikoden II	Konami	Konami	2000
162	Suikoden IV	Konami	Konami TYO	2005
163	Dragon Quest VIII	Square	Level 5	2005
164	Wild Arms III	Sony	Media Vision	2003
165	Final Fantasy X	Square (EA)	Square	2002
166	Final Fantasy XIII	Square	Square	2010
167	Skies of Arcadia: Legends	Sega	Overworks	2003
168	Disgaea: Hour of Darkness	Atlus	NIS	2003
169	Disgaea 2: Cursed Memories	KOEI	NIS	2006
170	Shining Force	Sega	Sonic Software Planning	1993
171	Shining Force 2	Sega	Sonic Software Planning	1994
172	Fire Emblem	Nintendo	Intelligent Systems	2003
173	Fire Emblem: Path of Radiance	Nintendo	Intelligent Systems	2005
174	Shenmue	Sega	AM2	2000
175	Shenmue 2	Sega	AM2	2001
176	The Elder Scrolls IV: Oblivion	Bethesda	Bethesda	2006

177	Baldurs Gate II	Black Isle Studios	Bioware	2001
178	Heroes of Might and Magic IV	The 3DO Company	New World Computing	2002
179	Ico	Sony Computer Entertainment International (SCEI)	Team Ico	2001
Platform				
No	**Title**	**Publisher**	**Developer**	**Date**
180	Sonic the Hedgehog	Sega	Sega	1991
181	Sonic the Hedgehog 2	Sega	Sega	1992
182	Sonic the Hedgehog 3	Sega	Sega	1994
183	Super Mario Bros	Nintendo	Nintendo	1985
184	Super Mario World	Nintendo	Nintendo	1992
185	Super Mario 64	Nintendo	Nintendo	1996
186	Super Mario Sunshine	Nintendo	Nintendo	2002
187	Super Mario Galaxy	Nintendo	Nintendo	2007
188	Super Mario Galaxy 2	Nintendo	Nintendo	2010
189	Blinx: The Timesweeper	Microsoft	Artoon	2002
190	Blinx 2	Microsoft	Artoon	2004
191	Jack and Daxter: The Precursor Legacy	Sony	Naughty Dog	2002
192	Rayman 3	Ubisoft	Ubisoft Paris	2003
193	World of Illusion	Sega	Disney	1992
194	Rainbow Islands	Taito	Taito	1986
195	Rainbow Islands Enhanced	Taito	Taito	1996
196	Manic Miner	Software Projects	Software Projects	1983
197	Frostbite	Activision	Activision	1983
198	Frogger	Starpath	Starpath	1984

199	Asterix	Sega	Sega	1993
200	Worms 4	Codemasters	Team 17	2005
201	Donkey Kong	Nintendo	Nintendo	1981
202	Donkey Kong 64	Nintendo	Rare	1999
203	Q*Bert	Gottleib	Gottleib	1982
204	Mega Man	Capcom	Capcom	1987
Fighting				
205	Street Fighter 2	Capcom	Capcom	1991
206	Final Fight	Capcom	Capcom	1989
207	Streets of Rage	Sega	Magical	1991
208	Streets of Rage 2	Sega	AM7	1992
209	Mortal Kombat	Midway	Midway	1993
210	Mortal Kombat 3	Williams	Sculptured	1995
211	Virtua Fighter 2	Sega	AM2	1996
212	Virtua Fighter 5	Sega	AM2	2007
213	Bushido Blade	Sony	Square	1997
214	Dead or Alive 3	Tecmo	Team Ninja	2001
215	Dead or Alive 4	Tecmo	Team Ninja	2006
216	Golden Axe	Sega	Sega	1989
217	Golden Axe 2	Sega	Sega	1991

The table below provides a complete cataloguing of all figures used with the thesis. In addition a complete description of the figure is provided as well as chapter and page number/s it can be found on.

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33	Super Monkey Ball Bonus Round	3	75
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37	Crazy Taxi (Passenger Destination)	3	78
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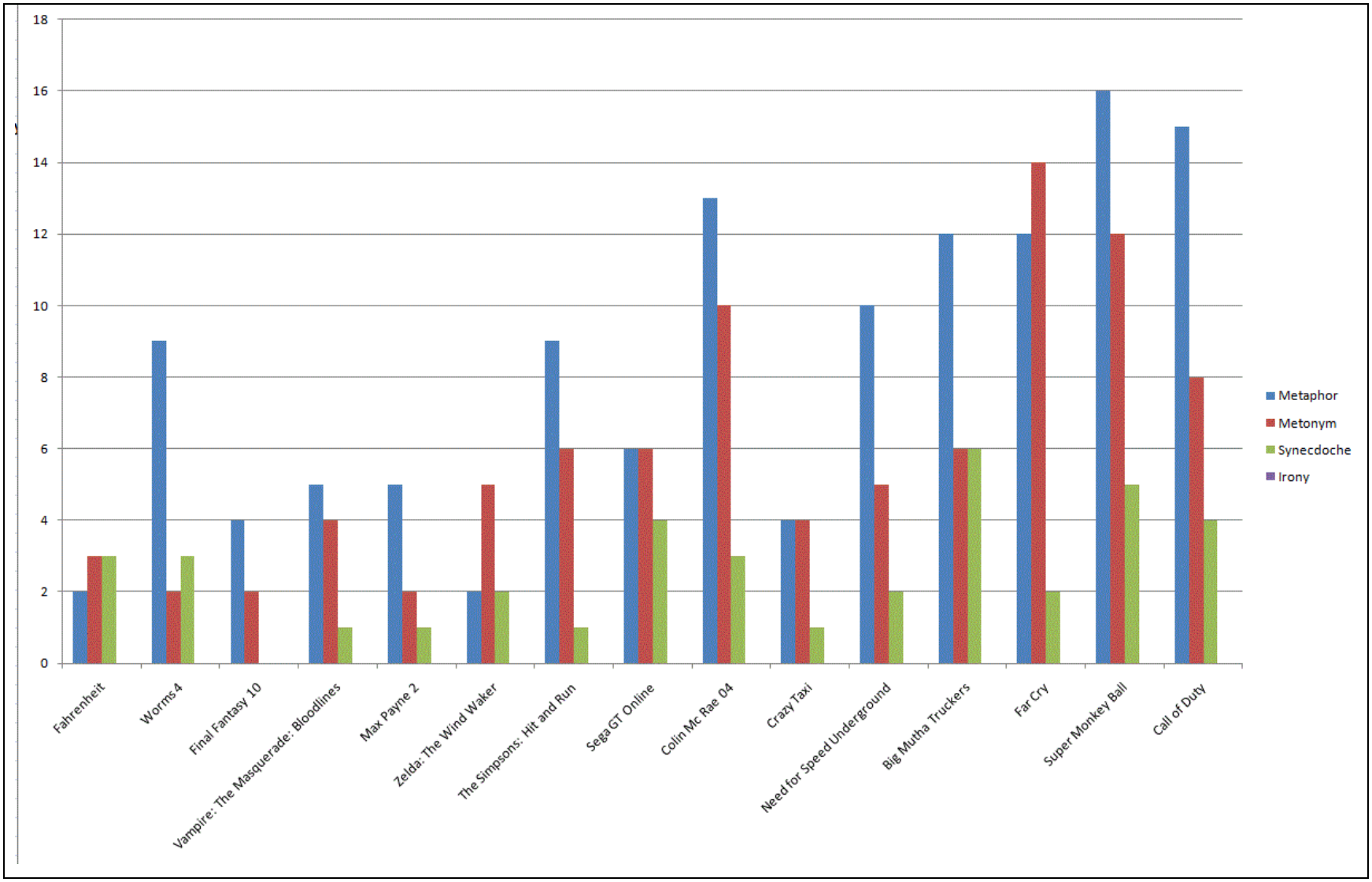
Appendix A: Data from Rhetorical Tropes in Games Study

Title	Rating													
	Gamespy	IGN	IGN: Reader	IGN: Press	Gamespot	Gamezone	GZ Web	Edge	CVG/Ass	Gamepro	GP: User	Gaming Target	Total Reviews	Average %
Fahrenheit	70.00	83.00	89.00	84.00	84.00	93.00	85.00	80.00	90.00	N/A	N/A	85.00	10	84.30
Worms 4	70.00	75.00	83.00	71.00	62.00	N/A	85.00	N/A	80.00	N/A	N/A	N/A	7	75.14
Final Fantasy 10	80.00	95.00	92.00	94.00	93.00	95.00	91.00	60.00	N/A	100.00	92.00	100.00	11	90.18
Vampire: The Masquerade: Bloodlines	80.00	84.00	86.00	80.00	77.00	90.00	79.00	60.00	86.00	80.00	N/A	N/A	10	80.20
Max Payne 2	100.00	94.00	92.00	86.00	90.00	96.00	89.00	60.00	93.00	90.00	74.00	84.00	12	87.33
Zelda: The Wind Waker	100.00	96.00	94.00	96.00	93.00	99.00	97.00	90.00	100.00	100.00	92.00	100.00	12	96.42
The Simpsons: Hit and Run	90.00	81.00	80.00	80.00	83.00	86.00	82.00	N/A	73.00	N/A	N/A	74.00	9	81.00
Sega GT Online	60.00	70.00	79.00	70.00	61.00	70.00	68.00	N/A	N/A	80.00	N/A	50.00	9	67.56
Colin Mc Rae 04	N/A	N/A	N/A	N/A	88.00	N/A	89.00	N/A	90.00	N/A	N/A	N/A	3	89.00
Crazy Taxi	80.00	96.00	87.00	91.00	87.00	N/A	50.00	70.00	90.00	100.00	82.00	93.00	11	84.18
Need for Speed Underground	80.00	90.00	87.00	88.00	80.00	81.00	83.00	70.00	84.00	100.00	94.00	81.00	12	84.83
Big Mutha Truckers	40.00	63.00	60.00	55.00	62.00	65.00	56.00	60.00	N/A	N/A	50.00	36.00	10	54.70
Far Cry	90.00	92.00	90.00	88.00	92.00	96.00	90.00	80.00	93.00	80.00	100.00	N/A	11	90.09
Super Monkey Ball	80.00	83.00	85.00	83.00	88.00	N/A	N/A	90.00	N/A	90.00	76.00	88.00	9	84.78
Call of Duty	100.00	93.00	92.00	92.00	90.00	94.00	92.00	70.00	93.00	100.00	100.00	N/A	11	92.36
Average	75	80	80	77	82	64	76	53	65	61	51	53		

Listing of games tested with review scores from a total of twelve videogame review sites; ten are by professional videogame journalists, whilst two (IGN: Reader and GP: User) are user reviews. An average is also presented for each game. This enables one to compare game quality with review score enabling one to determine the relationship between game quality and trope concentration and make up. Unfortunately, a number of games were not reviewed by all sites making fair comparisons difficult.

Trope Usage by Game					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Fahrenheit	2	3	3	0	8
Worms 4	9	2	3	0	14
Final Fantasy 10	4	2	0	0	6
Vampire: The Masquerade: Bloodlines	5	4	1	0	10
Max Payne 2	5	2	1	0	8
Zelda: The Wind Waker	2	5	2	0	9
The Simpsons: Hit and Run	9	6	1	0	16
Sega GT Online	6	6	4	0	16
Colin Mc Rae 04	13	10	3	0	26
Crazy Taxi	4	4	1	0	9
Need for Speed Underground	10	5	2	0	17
Big Mutha Truckers	12	6	6	0	24
Far Cry	12	14	2	0	28
Super Monkey Ball	16	12	5	0	33
Call of Duty	15	8	4	0	27
Total	124	89	38	0	251
Average	8	6	3	0	17
Percent	49	35	15	0	100

Above: Overall summary of trope usage across games investigated. The numbers refer to unique trope usages incidents within that game. A trend can be observed where the metaphor holds highest prevalence with this level decreasing through metonymy and synecdoche, finally reduced to zero for irony.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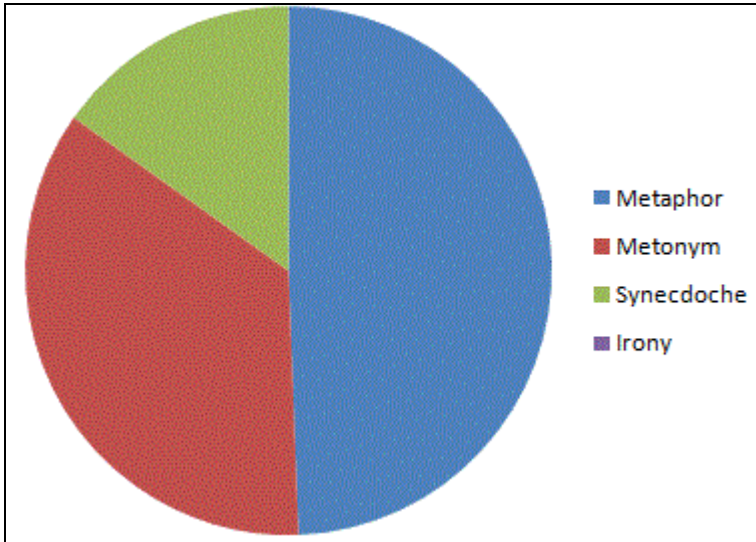
Fahrenheit
Worms 4
Final Fantasy 10
Vampire: The Masquerade: Bloodlines
Max Payne 2
Zelda: The Wind Waker
The Simpsons: Hit and Run
Sega GT Online
Colin Mc Rae 04
Crazy Taxi
Need for Speed Underground
Big Mutha Truckers
Far Cry
Super Monkey Ball
Call of Duty
Metaphor
Metonym
Synecdoche
Irony



Above: a bar chart showing trope prevalence by game and left: a pie chart showing overall trope concentration taken as a total over all games tested. Note the lack of irony in all results. This is not a mistake, the study failed to identify any instances of videogame irony at all.

Title	Release Date		
	GB	USA	JAP
Fahrenheit	16/09/2005	N/A	N/A
Worms 4	29/07/2005	N/A	N/A
Final Fantasy 10	24/05/2002	18/12/2001	19/07/2001
Vampire: The Masquerade: Bloodlines	01/02/2004	01/12/2003	N/A
Max Payne 2	24/10/2003	N/A	N/A
Zelda: The Wind Waker	02/05/2003	N/A	N/A
The Simpsons: Hit and Run	21/11/2003	N/A	N/A
Sega GT Online	06/02/2004	N/A	N/A
Colin Mc Rae 04	19/09/2003	N/A	N/A
Crazy Taxi	25/02/2000	N/A	N/A
Need for Speed Underground	28/11/2003	N/A	N/A
Big Mutha Truckers	09/05/2003	N/A	N/A
Far Cry	26/03/2004	N/A	N/A
Super Monkey Ball	03/05/2002	N/A	N/A
Call of Duty	07/11/2003	N/A	N/A

Title	Publisher	Developer	
Fahrenheit	Quantic Dream	Quantic Dream	
Worms 4	Codemasters	Team 17	
Final Fantasy 10	SCEE	Square	
Vampire: The Masquerade: Bloodlines	Activision	Troika	
Max Payne 2	Take 2	Remedy	
Zelda: The Wind Waker	Nintendo	Nintendo	
The Simpsons: Hit and Run	Vivendi	Radical Entertainment	
Sega GT Online	Sega	Wow Entertainment	
Colin Mc Rae 04	Codemasters	Codemasters	
Crazy Taxi	Sega	Hitmaker	
Need for Speed Underground	Electronic Arts	Electronic Arts	
Big Mutha Truckers	Empire Interactive	Eutechnyx	
Far Cry	Ubisoft	Crytek	
Super Monkey Ball	Infogrames	Amusement Vision	
Call of Duty	Activision	Infinity Ward	

Left: release date and developer / publisher information is provided for every game tested. This allows for comparison to be done based on these criteria and also helps readers and researchers identify these games easily in order to find videogame information and reviews or to purchase these games to conduct further study on them.

Title	Format			
	PC	PS2	X Box	Gamecube
Fahrenheit	1	1	1	0
Worms 4	1	1	1	0
Final Fantasy 10	0	1	0	0
Vampire: The Masquerade: Bloodlines	1	0	0	0
Max Payne 2	1	1	1	0
Zelda: The Wind Waker	0	0	0	1
The Simpsons: Hit and Run	1	1	1	1
Sega GT Online	0	0	1	0
Colin Mc Rae 04	1	1	1	0
Crazy Taxi	1	1	1	1
Need for Speed Underground	1	1	1	1
Big Mutha Truckers	1	1	1	1
Far Cry	1	0	0	0
Super Monkey Ball	0	0	0	1
Call of Duty	1	0	0	0
Total	11	9	9	6
Percent	73.33	60.00	60.00	40.00

Title	Supported Number of Players			
	1	2	4	8+
Fahrenheit	1	0	0	0
Worms 4	1	1	1	0
Final Fantasy 10	1	0	0	0
Vampire: The Masquerade: Bloodlines	1	0	0	0
Max Payne 2	1	0	0	0
Zelda: The Wind Waker	1	0	0	0
The Simpsons: Hit and Run	1	0	0	0
Sega GT Online	1	1	1	0
Colin Mc Rae 04	1	1	1	0
Crazy Taxi	1	0	0	0
Need for Speed Underground	1	1	1	0
Big Mutha Truckers	1	1	1	0
Far Cry	1	1	1	1
Super Monkey Ball	1	1	1	0
Call of Duty	1	1	1	1
Total	15	8	8	2
Percent	100.00	53.33	53.33	13.33

Title	Age Rating				
	3+	7+	12+	15+	18+
Fahrenheit	0	0	0	1	1
Worms 4	1	1	1	1	1
Final Fantasy 10	0	0	1	1	1
Vampire: The Masquerade: Bloodlines	0	0	0	0	1
Max Payne 2	0	0	0	0	1
Zelda: The Wind Waker	1	1	1	1	1
The Simpsons: Hit and Run	0	1	1	1	1
Sega GT Online	1	1	1	1	1
Colin Mc Rae 04	1	1	1	1	1
Crazy Taxi	1	1	1	1	1
Need for Speed Underground	1	1	1	1	1
Big Mutha Truckers	0	1	1	1	1
Far Cry	0	0	0	0	1
Super Monkey Ball	1	1	1	1	1
Call of Duty	0	0	0	1	1
Total	7	9	10	12	15
Percent	46.67	60.00	66.67	80.00	100.00

Crazy Taxi						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	0	2	0	2	4	44.44
Metonym	1	1	0	2	4	44.44
Synecdoche	0	1	0	0	1	11.11
Irony	0	0	0	0	0	0.00
Total	1	4	0	4	9	

Far Cry						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	0	9	0	3	12	42.86
Metonym	0	7	2	5	14	50.00
Synecdoche	0	0	2	0	2	7.14
Irony	0	0	0	0	0	0.00
Total	0	16	4	8	28	

Fahrenheit						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	1	1	0	0	2	25.00
Metonym	0	2	0	1	3	37.50
Synecdoche	0	2	1	0	3	37.50
Irony	0	0	0	0	0	0.00
Total	1	5	1	1	8	

Final Fantasy 10						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	1	1	0	2	4	66.67
Metonym	0	1	0	1	2	33.33
Synecdoche	0	0	0	0	0	0.00
Irony	0	0	0	0	0	0.00
Total	1	2	0	3	6	

Max Payne 2

	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	1	2	1	1	5	62.50
Metonym	0	1	0	1	2	25.00
Synecdoche	0	0	0	1	1	12.50
Irony	0	0	0	0	0	0.00
Total	1	3	1	3	8	

Super Monkey Ball

	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	5	5	3	3	16	48.48
Metonym	4	3	3	2	12	36.36
Synecdoche	0	3	0	2	5	15.15
Irony	0	0	0	0	0	0.00
Total	9	11	6	7	33	

Zelda: The Wind Waker

	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	0	1	0	1	2	22.22
Metonym	1	2	0	2	5	55.56
Synecdoche	0	1	0	1	2	22.22
Irony	0	0	0	0	0	0.00
Total	1	4	0	4	9	

Trope Usage by Genre					
Driving and Racing games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Sega GT Online	6	6	4	0	16
Colin Mc Rae 04	13	10	3	0	26
Crazy Taxi	4	4	1	0	9
Need for Speed Underground	10	5	2	0	17
Big Mutha Truckers	12	6	6	0	24
Genre Total	45	31	16	0	92
Adventure Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Fahrenheit	2	3	3	0	8
The Simpsons: Hit and Run	9	6	1	0	16
Genre Total	11	9	4	0	24
Role Playing Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Final Fantasy 10	4	2	0	0	6
Vampire: The Masquerade: Bloodlines	5	4	1	0	10
Zelda: The Wind Waker	2	5	2	0	9
Genre Total	11	11	3	0	25
Action Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Worms 4	9	2	3	0	14
Max Payne 2	5	2	1	0	8
Super Monkey Ball	16	12	5	0	33
Genre Total	30	16	9	0	55
First Person Shooting (FPS) Games					
	Trope				
Title	**Metaphor**	**Metonym**	**Synecdoche**	**Irony**	**Total**
Far Cry	12	14	2	0	28
Call of Duty	15	8	4	0	27
Genre Total	27	22	6	0	55
Grand Total	124	89	38	0	251
Percent	49	35	15	0	100

The summary above is similar to the overall summary chart on the previous page but also charts trope usage by genre allowing genre trope usage totals to be calculated and hence trends of usage determined for each genre.

	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	6	4	1	1	12	50.00
Metonym	5	1	0	0	6	25.00
Synecdoche	6	0	0	0	6	25.00
Irony	0	0	0	0	0	0.00
Total	17	5	1	1	24	
Far Cry						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	0	9	0	3	12	42.86
Metonym	0	7	2	5	14	50.00
Synecdoche	0	0	2	0	2	7.14
Irony	0	0	0	0	0	0.00
Total	0	16	4	8	28	
Super Monkey Ball						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	5	5	3	3	16	48.48
Metonym	4	3	3	2	12	36.36
Synecdoche	0	3	0	2	5	15.15
Irony	0	0	0	0	0	0.00
Total	9	11	6	7	33	
Call of Duty						
	Menu	Gameplay				
Trope	Interface/Options	HUD	Character	Environment	Total	Percent
Metaphor	1	8	3	3	15	55.56
Metonym	0	3	1	4	8	29.63
Synecdoche	1	0	0	3	4	14.81
Irony	0	0	0	0	0	0.00
Total	2	11	4	10	27	
Average	0.98	1.75	0.42	1.00	4.15	
Grand Total	59	105	25	60	249	
Percent	24	42	10	24	100	

Above: finally the trope usage for each game is broken down to show where within the game the trope was discovered. Each of the four tropes are investigated within a games interface, HUD, characters and environment. This detailed investigation was performed for each game but in the interests of keeping the document an acceptable length only a sample is provided.

Appendix B: Key for Common Form Summary Tables

Genre: The type of game in which the common forms presence is being evaluated in i.e. all the other information on that row will refer to the presence of the common form in this genre e.g. if it was Puzzle all the other columns on that row i.e. Level, Details and Examples would be related to the presence of the common form in games of the Puzzle genre.

Level: The level of importance this common form holds within this genre rated on a scale ranging from zero to ten where zero means the common form has no presence or relevance within the genre and ten meaning that the common form is essential to the core game mechanics and gameplay of games of the genre.

Details: A short description of how the common form is most typically and regularly presented within that genre, if the description does not seem clear please refer to the relevant section of the chapter for more detail.

Examples: A brief list of example games which demonstrate this common form in effect well. Many more examples can be seen in the relevant section of the chapter.

Detailed Explanation

Summary charts are provided at the end of each section after the evaluation of that common form and provide at-a-glance indication of whether common form is present within the genre (X) or does not exist (-) and if present, whether it has universal presence or is present with exceptions or limitations (X*).

Charts feature a scoring system with importance of the common form to games of that genre given a rating out of ten. Higher ratings denote a common form of great importance whilst lower ratings mean the common form is not a vital part of the core gameplay and much of the game experience would still be intact without it.

On the two extremes a score of ten out of ten means the common form is vital to the game experience and removing it would ruin the game whilst the lowest score of zero out of ten means the form is of no importance whatsoever and the game experience would be just as rich without it and in essence would remain unchanged.

To aid understanding of the ratings assigned it should be noted that scores of 70% (7/10) or greater define genres which provide excellent, strong and clear examples of the common form in effect. Additionally Genres where common form presence is scored at 50% (5/10) or over are still good examples of the presence of the common form. Genres where the common form importance is rated at less than 50% (4/10 or less) are considered to be weak or poor examples of the common form where the presence of the common form would (likely) be considered an exception rather than the norm (X*).

Appendix C: Key for Common Form Mapping Diagrams

A common form relationship diagram has been created to clearly define major and minor common form instances and plot the relationships between these.

On the relationship diagrams boxes represent major and minor common forms. The box holds the name of the relevant common form. Lines are drawn between the common forms to represent the relationships that exist between major and major common forms, major and minor, minor and major and minor and minor common forms.

An effort has been made to use colour to make the diagrams as clear and easy to read as possible. A simple colour system has bee chosen:

- Black lines represent relationships between a major common form and the minor common forms that come directly from it. These are considered internal relations
- Blue lines represent external relationships; that is either relationships between minor common forms or relationships between different major and minor common forms.
- Major common forms have an orange background.
- The meaning is slightly different in modelling of the genre specific common forms where orange refers to universal validated common forms (next level)
- On the genre specific common forms a pale orange/tan colour refers to the genre of identification and common forms (next level) which do not hold universal presence across genres.
- Validated Minor common forms have a yellow background; that is common forms that hold applicability over all gaming genres.
- Non-validated minor common forms have a green background; that is common forms which exist over more than one gaming genre but not all genres.

Appendix D: Glossary of Terms

AI: Artificial Intelligence

FPS: First Person Shooter

RTS: Real Time Strategy

RPG: Role Playing Game

MMORPG: Massively Multiplayer Role Playing Game

MUD: Multi User Dungeon

HUD: Heads Up Display

NDS: Nintendo Dual Screen Handheld Console

NPC: Non Player Character

PSP: Playstation Portable Handheld Console

FMV: Full Motion Video

QTE: Quick Time Event

SMS: Short Message Service

Appendix E: Interfaces: A Tropical Analysis of Game Interfaces

interfaces

This issue's guest columnists

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Steven Allick is a research student in the School of Computing at the University of Teesside, UK. He is a veteran gamer with strong knowledge of video games and technology. He researches the application of semiotics and tropes to video games.

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Since 2007 Paul Cairns has been a senior lecturer in human–computer interaction at the University of York, and programme leader for the brand new MSc in Human-Centred Interactive Technologies. He spent the previous six years at the UCL Interaction Centre. His research interest include immersion and user experience in games and research methods for HCI. Together with Anna Cox, he has edited a book on this topic, imaginatively called *Research Methods for HCI*.

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Graham McAllister is a senior lecturer in HCI at the University of Sussex. His background includes software engineering, computer graphics, network programming and music technology. He now researches into accessibility, in particular how blind and visually impaired people gain access to digital information online with multimodal technology. His other main research area is improving methods for evaluating the usability and user experience of video games.

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Johannes Löschner is a student of Applied Communications and Media Science at the University Duisburg-Essen. Currently he is undertaking his work experience within the Collaborative Virtual and Augmented Environments Department at Fraunhofer FIT, where he focuses on game design studies.

Alan Dix is a professor at Lancaster University. He writes the odd book and the odd very odd paper. He regards the reappearance of *Dr Who* as the most important event in revitalising a generation's technological excitement during the 20 years he has worked in HCI. He keeps trying to get this into his research … and may do some day soon.

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After a degree in Applied Computer Systems (Brunel) Philip Webb designed and developed database applications for 10 years. To learn more about usability and designing for user needs he is currently studying for an MSc in HCI and ergonomics at UCLIC. His project is a distributed cognition study of the Victoria Line control room at London Underground, aiming to understand how current practices will be impacted by the Victoria Line upgrade.

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interfaces

A tropical analysis of game interfaces

By 'tropical' in this paper we refer to the use of tropes as a means to analyse video game interfaces rather than the balmy nature of their climates. Using the linguistic definition a trope can be considered a rhetorical figure of speech. Common examples include the metaphor, metonym and synecdoche. An example metaphor is a table leg; supporting the table as a leg supports a person, a common metonym is the crown used to refer to the monarchy and for synecdoche the head often refers to the whole person as seen in a portrait. The literary definition considers a trope to be a common form of expression, indeed tropes have an established association with understanding and they are the building blocks that enable meaning-making and allow meaning to be communicated, an essential method of improving understanding (Chandler, 2002, p124).

Within the field of video games, about which so much remains unknown, the usage of tropes, a well understood facilitator of meaning-making and improved knowledge, holds potential for substantial enlightenment. This is being accomplished through discovery of common forms of expression in video games which are believed to exhibit characteristics of deeper game tropes in the linguistic sense that are just beginning to emerge.

For common forms to be considered potential linguistic tropes they should have application across all gaming genres. Therefore choosing an effective set of genres capable of covering the majority of game releases was vital. A set of ten genres was chosen based on Clive Fencott's *Game Invaders* (2008) and Stephen Poole's *Trigger Happy* (2000) books. The ten genres chosen for investigation were:

1 Shooter
2 Sports
3 Puzzle
4 Driving
5 Strategy
6 Simulation
7 Adventure
8 Role Playing
9 Platform
10 Fighting

Common forms of expression were initially identified totally independently of the games genre, age, platform, and developer to ensure the study is not influenced in any way and to allow the maximum body of video games to be open for investigation. Each common form identified is initially explained within the context of its genre of origin to provide adequate contextual setting. The study examines games' Heads Up Display (HUD), Interface, Environment and Non Player Characters (NPC) for these common forms but avoids the low level mechanics such as character movement, jumping, button mapping, etc, as these elements taken across a volume of games would quickly become excessive and unmanageable.

To date a total of twenty-two potential common forms of expression have been identified. Out of these fourteen have complete cross-genre applicability. These are:

1 Energy / Status Indication
2 Player Status Indication (Icons)
3 Player Character Icon / Portrait
4 Player Companions / Team Mates
5 Timer
6 Colour (Colour Systems)
7 Physical Representation of Player Character
8 Speed (the control of)
9 Difficulty
10 Level, Stage or Mission Selection
11 Character Customisation and Development
12 Loading and Saving of Game Data
13 The Presence of a Career or Story Mode
14 Character Specific Special Power

In this short paper we are only going to consider two of these common forms in depth. Firstly, player status indication includes HUD based health bars as well as any environmental health systems. Initially it might be assumed that such indicators are limited to the first person shooter and action genres but most genres have been proven to feature either environmental, HUD based health indication, or both. Likewise icons relating to player status are equally universal regardless of whether this relates to an identifiable (human) character or to the strength of a company of soldiers or even the prosperity of a city or theme park.

Figure 1 Energy bars are a common means of status representation. Often colour reinforces the level of energy with green representing good health (the top bar), orange medium (bottom), and red low health (middle).

Examination of status indication methods proved one of the most fruitful parts of the study with the universal presence of these allowing a general concept to emerge of the use of an abstract quantity e.g. score, health, time, etc, to represent the player's power or capability versus that of the game and its internal systems.

Use of colour for communication of vital information to the player is widespread across games, its immediacy making it

ideal for warning a player in action titles where split second reactions are essential. Most common is the three tone system of green, orange and red. Green represents an optimal, good or healthy state, orange an intermediate state and red a negative, danger or low health state. Colour intensity often denotes the extent of the danger. Even within slower paced simulation titles coherent colour systems can be observed on the available map overlays where colour intensity denotes the severity or extent of the data, e.g. of pollution or power, water, waste disposal, facility provision and more.

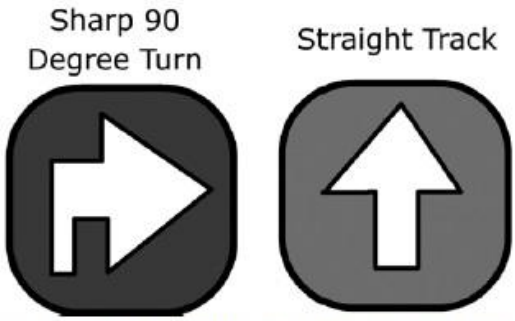

Figure 2 Colour is common in the icons that rally games use to warn of upcoming corners, with increasing colour intensity used on increasingly sharp corners (left) such as hairpins, where a red backdrop would reinforce curve severity. Straight track or gentle curves (right) commonly display against a green backdrop.

Generalisation and further work

Whilst it is acknowledged that more may still be uncovered, the study has succeeded in discovering and validating a comprehensive set of common forms of expression. Separate common forms can combine to form core common forms with each potentially having several related sub common forms. For example the core common form of status representation encapsulates energy and status bars, character representation as well as common forms from real life such as speedometers and rev counters. The interrelationship between status representation and colour systems has also been noted.

This leads us on to consider how common forms can be grouped by location within the game environment, interface and HUD. A majority of common forms are present primarily within actual gameplay and visible within the HUD or environment with a few exceptions such as difficulty which is generally selected before gameplay begins.

Many insights have been revealed with theoretical value and potential game design application. Video games are rich media; a single game uses many common forms; even a tiny component of the game's visual display may use two or more common forms.

It is interesting to observe the relationship between abstract and direct modes of representation. In driving games direct

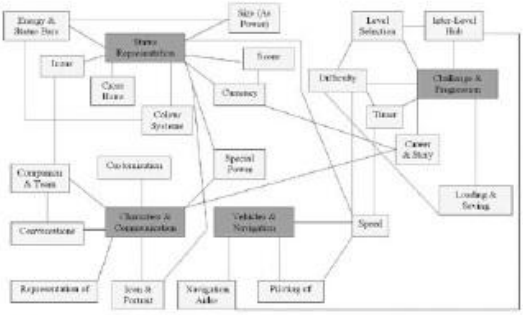

Figure 3 A sample of the relationship mapping between four major common forms and the minor common forms belonging to them

representations are favoured with a rear view mirror, RPM, speedometer and temperature gauges recreated accurately. Meanwhile a first person shooter HUD relies on abstract representation; energy bars do not have a real-world parallel; they are an abstraction that facilitates visual communication of the concept of health which would be felt, both bodily and mentally, in a whole variety of ways by a person in the real world.

It is expected that further study will allow improved understanding of:

> How a game can improve appeal to a specific demographic; relating requirements of a demographic to particular groupings and usage levels of common forms.
>
> How genre shapes games content and user experience; describing a genre with a set of common forms and their usage levels.
>
> How expression forms and modes have evolved over time and the lessons that can be learned from past video games.

It is interesting to consider benefits of integrating the embryonic content model emerging with an established model such as the activity profiling used in *Strange Analyst* (Adams, 2006) to classify game contents using forty- nine unique activity types. It is useful to consider relationships between activities and common forms and whether these two models can be reconciled.

It may also be the case that a relatively simple abstract model of video games may emerge within which the various forms of trope exhibited by video games will be contextualised.

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